

6th
PTNCE
PRAGUE
24-27/9/2019



SUPPORTED BY



FACULTY OF SCIENCE
Charles University



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HBES

Human Behavior
& Evolution Society



ZOO PRAHA

PTNCE
PRAGUE
24-27/9/2019



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University of Wrocław, Poland



**Dear PTNCE members,
supporters and everybody
who is interested in human
evolution**

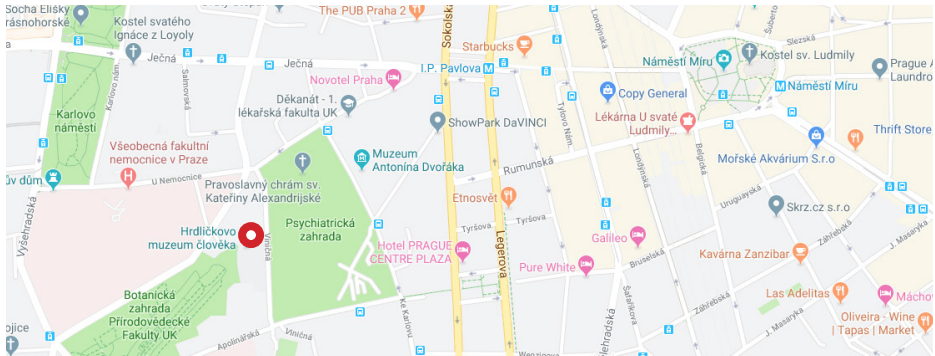
It is my great pleasure to invite you participate in the 6th PTNCE conference, which for the first time will take place outside Poland. Our close friends – PTNCE members from the Czech Republic – have agreed to organize our conference at the Charles University in the fascinating city of Prague! We are very fortunate to have such an active PTNCE group in Prague, and on behalf of the PTNCE Board I would like to express our great appreciation for their efforts in organizing the forthcoming conference. Beginning with the first PTNCE conference in Wrocław, we have had a series of successful scientific meetings in Poznań, Toruń, Kraków and Warszawa, where plenary speakers included David Perrett, Chris Stringer, Ruth Mace, Tecumseh Fitch, Robin Dunbar or Russell Gray. This year's conference in Prague promises to be an equally exciting event. The high scientific quality emblematic of our conferences combined with the charms of Prague and a great team of organizers should convince all of you to attend the PTNCE 2019 conference.

See you all in Prague!

**prof. Bogusław Pawłowski
President of PTNCE**

VENUE

The conference takes place in a 19th century building of the **Faculty of Science of the Charles University**, a place where various outstanding scholars including Nobel Prize winners Albert Einstein and Jaroslav Heyrovský used to carry out their research. The school is situated in a quiet part of the city centre, surrounded by botanical garden, but easily accessible by public transport.



Where to get off

SUBWAY **I. P. Pavlova**
(Line C, the red line) or **Karlovo náměstí**
(Line B, the yellow line)

TRAM **Štěpánská, I.P.Pavlova,**
or **Karlovo náměstí**

Arriving by plane

BUS line 119 from **Terminal 1 or 2 – Nádraží Veleslavín** (final stop), transfer to SUBWAY Line A (green): **Nádraží Veleslavín – Muzeum**, then SUBWAY Line C (red): **Muzeum – I. P. Pavlova**

Arriving by train

from the Main Train Station, take SUBWAY Line C (red): **Hlavní nádraží – I. P. Pavlova**, other train stations are likewise linked to subway: head for **I.P. Pavlova**

Arriving by car

One can park in front of the Faculty of Science building for a fee but the capacity is limited.

Getting around

The most convenient way of getting around is to use public transport (subway, trams, buses). Use **“Lítačka”** app to find connections, purchase tickets, and acquire information about possible changes in routes. Similar information is also available at **dpp.cz**.

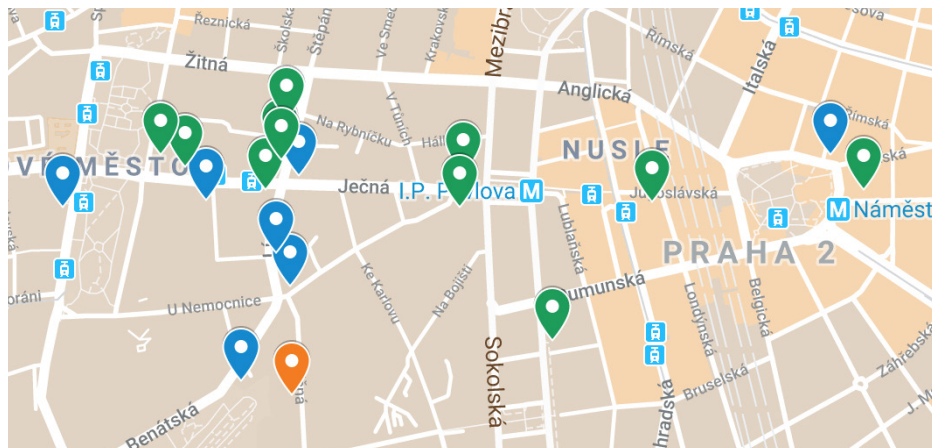
How to get to Banquet venue

(Vinohradský pivovar, Korunní 106, Praha 2). From the **Štěpánská** stop take TRAM 10 or 16 to the **Orionka** stop. It is 10 minutes ride.



MAP OF SURROUNDINGS

In walking distance from the Faculty of Science (Viničná 7)



PTNCE 2019



Places to drink

- Bar Mrtvá Ryba
- Bar U Tří kočiček
- Náplavka bar area
- Pub Na Křižovatce - Uterus
- Tearoom and wine "U božního mlýna"

Places to shop

- BILLA supermarket
- Potraviny Bluesea Minimarket
- Albert supermarket



Places to eat

- Restaurace U Šumavy**
Classic Czech cuisine and a large selection of beers
- Pivovarský dům**
Restaurant and beer gallery, brewery
- Pizzeria Al Tagliere**
Italian restaurant
- Mibi's International Cuisine**
Vietnamese restaurant
- Bao Bao**
Vietnamese bistro
- Beer & Burger U Čížků**
Restaurant specializes in hamburgers, steaks, and salads
- Etnosvět**
Vegetarian and vegan food
- Vinohradský Parlament**
Czech cuisine and brewery
- Loving Hut - Vinohrady**
Vegan restaurant
- Golden Tikka**
Indian restaurant
- Fast food Oriental Grill**
Arabian cuisine

SOCIAL ACTIVITIES

Special tram tour

**September 25, 2019 (free of charge),
19:30–20:30**

The T3 tram and the city of Prague are an inseparable pair. In collaboration with the studio Anna Marešová designers, the Prague Public Transport Company, a.s., has conceived a pleasure tram that continues the tradition of the legendary Tatra T3 tram by framing it in a new context while respecting its authentic visage. Let us take you around Prague's beautiful city center in this not so ordinary tram.

Student bonfire night

**September 26, 2019 (free of charge),
19:30–22:00**

Located in the walking distance from the faculty and in the city center, old-fashioned bowling place with a big garden, Bar Kuželna, is a perfect place for our Student bonfire night. Beautiful view over the Vyšehrad castle near the historical fortification included. Let's experience traditional Czech "táborák", which similar to barbecue, where we will bake sausages and drink beer under the open sky. Non-students are welcomed as well.

Banquet

September 27, 2019, 19:00–till late

The banquet will take place in Vinohradský pivovar, which is a restaurant and also local brewery so you will be able to taste the company's own high-quality beer. You can expect live Roma music, buffet-style dinner and two drinks of your choice (non-alcoholic/alcoholic) are also included.

Zoo guided tour

September 28, 2019, 14:00–15:30

The fifth best ZOO in the world, Prague ZOO is definitely something you shouldn't miss when visiting the Czech Republic's capital. Come and see gorillas, elephants, polar bears and many more. We prepared guided tour for our conference participants.

City centrum guided tour

September 28, 2019, 10:00 –13:00

You can look forward to Old Town three-hour long guided tour. We will not miss Wenceslas square, Havel's market, The Estates Theatre, Charles University, Powder Tower, Old Town Square, Týn Church, Astronomical clock, Paris Street, Old New Synagogue, Old Jewish Cemetery, Jewish Town Hall, Rudolfinum Concert Hall. Don't worry – break included.

PROGRAMME AT A GLANCE

	Tue 24	Wed 25	Thu 26	Fri 27	
09:00	Workshop I	Plenary I <i>Daniel Nettle</i>	Plenary II <i>Jaroslav Flegr</i>	Plenary III <i>Christine Caldwell</i>	09:00
09:15					09:15
09:30					09:30
09:45					09:45
10:00	Coffee	Coffee	Coffee	Coffee	10:00
10:15	Workshop II	Session I Cultural variation	Session IV Cooperation	Session VIII Life history	10:15
10:30					10:30
10:45					10:45
11:00					11:00
11:15	Coffee				11:15
11:30	Workshop III	Coffee	Coffee	Coffee	11:30
11:45					11:45
12:00		Session II Mating	Session V Individual differences	Session IX Facial appearance	12:00
12:15					12:15
12:30					12:30
12:45					12:45
13:00	Lunch	Lunch	Lunch	Lunch	13:00

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	Tue 24		Wed 25	Thu 26	Fri 27	
14:00	Workshop IV		The Professor Jan Strzałko Award 2018	The Professor Jan Strzałko Award 2017	Session X Morality	14:00
14:15						14:15
14:30						14:30
14:45	Coffee		Session III Language	Session VI Competition	Coffee	14:45
15:00						15:00
15:15	Registration (from 15:00)	Workshop V	Coffee	Coffee	Session XI Physical attractiveness	15:15
15:30						15:30
15:45			15:45			
16:00			Best student talk and poster award 2019	16:00		
16:15				16:15		
16:30				16:30		
16:45			Opening ceremony	Symposium The Evolution of ritual behaviour	Session VII Vocal and olfactory communica- tion	Closing remarks & Announcing PTNCE 2020
17:00	Symposium Kin and human reproduction	Poster Session I	Poster Session II			
17:15				17:15		
17:30				17:30		
17:45				17:45		
18:00	Keynote Talk Kristen Hawkes	Poster Session I	Poster Session II	PTNCE General Assembly 2019	18:00	
18:15					18:15	
18:30					18:30	
18:45					18:45	
19:00	Wine Reception (till 21:45)	Special tram tour (till 20:30)	Student bonfire night (till 22:00)	Banquet (till late)	19:00	
19:15					19:15	
19:30					19:30	

PROGRAMME TUE 24

		WORKSHOP A	WORKSHOP B
09:00	Workshop I	Introduction of the basics of portrait photography <i>Vít Třebický, Jitka Třebická Fialová & David Stella</i>	Oral presentations: Business as usual <i>Daniel Nettle</i>
10:00	Coffee		
10:15	Workshop II	Setup of standardised portrait scenes <i>Vít Třebický, Jitka Třebická Fialová & David Stella</i>	An alternative approach to giving talks <i>Daniel Nettle</i>
11:15	Coffee		
11:30	Workshop III	Individual practice supervised by lecturers <i>Vít Třebický, Jitka Třebická Fialová & David Stella</i>	Revising presentations in light of what we have learned <i>Daniel Nettle</i>
13:00	Lunch		
14:00	Workshop IV	Image postprocessing I (colour calibration) <i>Vít Třebický, Jitka Třebická Fialová & David Stella</i>	How to prepare poster in LaTeX I <i>Ayten Yeşim Semchenko</i>
15:00	Coffee		
15:15	Workshop V	Image postprocessing II <i>Vít Třebický, Jitka Třebická Fialová & David Stella</i>	How to prepare poster in LaTeX II <i>Ayten Yeşim Semchenko</i>
15:00	Registration (15:00–16:45)		
16:45	Opening ceremony		

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17:00	Symposium Kin and human reproduction Chair <i>Kristen Hawkes</i>	17:00	Will granny save me? The effect of birth status and grandmothers' presence on grandchildren's survival	<i>Ilona Nenko</i>
		17:15	Presence of grandmothers in the neighborhood of their grandchildren and their possible impact on the survival of these children. Case study of škvorec estate in the 18th and 19th century [s]	<i>Barbora Janáková Kuprová</i>
		17:30	Charlie Bucket effect: Two grandmothers decrease survival probability	<i>Petr Tureček</i>
		17:45	Grandpas can do the the job similarly well: Positive effect of granfathers presence on offspring's survival	<i>Jan Havlíček</i>
		18:00	Mortality of orphaned children (West Bohemia, 1700-1850)	<i>Alice Velková</i>
18:15	Keynote Talk Chair <i>Grazyna Jasienska</i>	18:15	Grandmothers and human evolution	<i>Kristen Hawkes</i>
19:30	Wine Reception (till 21.45)			

PROGRAMME WED 25

09:00	Plenary I Chair <i>Bogusław Pawłowski</i>	09:00	Food insecurity, appetite, and obesity: Evolutionary, epidemiological, psychological and comparative perspectives	<i>Daniel Nettle</i>
10:00	Coffee			
10:15	Session I Cultural variation Chair <i>Christine Caldwell</i>	10:15	Investigating adaptive functions of male and female genital mutilations: A phylogenetic comparative study [s]	<i>Gabriel Šaffa</i>
		10:30	General average from the standpoint of evolutionary studies	<i>Jacek Wiewiorowski</i>
		10:45	Identifying post-marital residence patterns in prehistory: A phylogenetic cross-cultural analysis [s]	<i>Václav Hrnčíř</i>
		11:00	Cultural transmission in local communities	<i>Ivan Murin</i>
		11:15	National income inequality predicts cultural variation in mouth to mouth kissing	<i>Christopher D. Watkins</i>
11:30	Coffee			
12:00	Session II Mating Chair <i>Piotr Podlipniak</i>	12:00	The comparison of the additive and threshold models of mate choice [s]	<i>Zsófia Csajbók</i>
		12:15	Links between urbanization in modern Russia and the intensity of sexual selection and polygyny among males [s]	<i>Olga Semenova</i>
		12:30	The reason to propose is ... not related to HLA	<i>Ilona Croy</i>
		12:45	Vicinity of obscenity: Inductive reasoning about female pornography preferences [s]	<i>Maximilian T. P. von Andrian- Werbung</i>
13:00	Lunch			

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14:00	The Professor Jan Strzałko Award 2018 Chair <i>Katarzyna A. Kaszycka</i>	14:00	Research into the male intra-sexual competition: First years of just scratching the surface	<i>Vít Třebický</i>
14:45	Session III Language Chair <i>Ilona Croy</i>	14:45	An ultimate-level account of strategic language use in conversation	<i>Slawomir Waciewicz</i>
		15:00	The influence of socio-demographic factors on language skills and ethnobiological knowledge of contemporary populations in Papua New Guinea [s]	<i>Alfred Kik</i>
		15:15	Rhythm syntax in music as an evolutionarily old communicative tool	<i>Piotr Podlipniak</i>
		15:30	Rates of diversification of ethnolinguistic groups, informed by a dated global phylogeny of human populations	<i>Pavel Duda</i>
15:45	Coffee			
16:15	Symposium The evolution of ritual behaviour Chair <i>Martin Lang</i>	16:15	Effects of Kavadi ritual on status management	<i>Radek Kundt</i>
		16:30	Effects of Kavadi ritual on mate attractiveness [s]	<i>Peter Maňo</i>
		16:45	Effects of Kavadi ritual on psychophysiological well-being	<i>Martin Lang</i>
		17:00	A multi-level selectionist approach to religious ritual behaviour	<i>Andrew Atkinson</i>
		17:15	Rigidity and automaticity in the context of genesis and function of ritualized behavior [s]	<i>Aneta Niczyporuk</i>
		17:30	What's under the hood? Rituals and the mechanisms that make them go	<i>Konrad Talmont-Kaminski</i>
17:45	Poster Session I			
19:30	Special tram tour (till 20:30)			

PROGRAMME THU 26

09:00	Plenary II Chair <i>Jan Havlíček</i>	09:00	Behavioral effects of human toxoplasmosis	<i>Jaroslav Flegr</i>
10:00	Coffee			
10:15	Session IV Cooperation Chair <i>Slawomir Waciewicz</i>	10:15	Pleasing others to improve indirect reciprocity, an agent-based simulation [s]	<i>Marcus Krellner</i>
		10:30	Promoting cooperation between groups: can subclinical psychopaths be the nice guys?	<i>Ádám Putz</i>
		10:45	Leaders and Cheaters: Nonverbal communication and genetic trail in male group cooperation	<i>Victoria Rostovtseva</i>
		11:00	Wanna be cool? Be as altruistic as your friends! – Norm followers, cheaters and costly signallers in a sport charity campaign [s]	<i>Judit Mocos</i>
		11:15	Storytelling and messages of cooperation - insights from literary studies	<i>Marta Sibierska</i>
11:30	Coffee			
12:00	Session V Individual differences Chair <i>Martyna Molak</i>	12:00	Individual differences in the rating of flower beauty [s]	<i>Martin Hůla</i>
		12:15	Not all snakes are alike: A complex study of the affective response to different snake specie	<i>Eva Landová</i>
		12:30	Empirical verification of the hypothesis that conservatism and liberalism are evolutionary strategies to avoid the costs of outbreeding and inbreeding depression	<i>Łukasz Budzicz</i>
		12:45	Scary and nasty beasts: Fear of predators vs disease avoidance in animal phobias	<i>Jakub Polák</i>
13:00	Lunch			

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14:00	The Professor Jan Strzałko Award 2017 Chair <i>Katarzyna A. Kaszycka</i>	14:00	Cross-cultural determinants and aspects of smell testing and preferences	<i>Agnieszka Sorokowska</i>
14:45	Session VI Competition Chair <i>Christopher D. Watkins</i>	14:45	Dominance and friendly behaviour during self-presentation of men in a mating context is linked to their testosterone levels	<i>Jitka Lindová</i>
		15:00	Attitudes to immigration are predicted by intra-sexual competition and the attractiveness of the immigrant	<i>Michael Stirrat</i>
		15:15	Testosterone and cortisol dynamics model for sexual partner competition: Presentation and corroborating statistical outcomes	<i>Jakub Binter</i>
		15:30	Structural microfoundations of the society. The evolutionary behavioural science founding of the social sciences	<i>Tamás Dávid-Barrett</i>
15:45	Coffee			
16:15	Session VII Vocal and olfactory communication Chair <i>Marek Špinka</i>	16:15	Fundamental frequency and dominant cepstral peak of mens' voices predicts testosterone levels: an exploratory study [s]	<i>Pavel Šebesta</i>
		16:30	No evidence for adaptation effects of voice pitch on attractiveness judgements [s]	<i>Jessica Ostrega</i>
		16:45	Olfactory cuteness – baby body odours recruit pleasure network in the maternal brain [s]	<i>Laura Schäfer</i>
		17:00	Does handshaking provide a means of olfactory communication in humans?	<i>S. Craig Roberts</i>
17:15	Poster Session II			
19:30	Student bonfire night (till 22:00)			

PROGRAMME FRI 27

09:00	Plenary III Chair <i>S. Craig Roberts</i>	09:00	The Cog in the Ratchet: Investigating the cognitive mechanisms underpinning human cumulative culture	<i>Christine Caldwell</i>
10:00	Coffee			
10:15	Session VIII Life history Chair <i>Daniel Nettle</i>	10:15	Sibling relations in patchwork families – reciprocity, inclusive fitness, and competition for resources	<i>Ferenc Kocsor</i>
		10:30	Women’s birth parameters and level of morphological femininity in reproductive age	<i>Agnieszka Żelaźniewicz</i>
		10:45	Early environment, physical activity and potential fertility	<i>Grazyna Jasienska</i>
		11:00	The association between 2D:4D ratio and aggression in children and adolescents: Cross-cultural and gender differences	<i>Valentina Burkova</i>
		11:15	A field guide to identifying <i>Homo sapiens</i> . Defining human species in face of recent genetic and paleoanthropological data	<i>Martyna Molak</i>
11:30	Coffee			
12:00	Session IX Facial appearance Chair <i>Michael Stirrat</i>	12:00	Preferences of allometric and non-allometric variation in sexual shape dimorphism based on faces from four distant cultures and its relationship to perception of masculinity and femininity	<i>Karel Kleisner</i>
		12:15	Scleral pigmentation leads to conspicuous, not cryptic, eye morphology in chimpanzees [s]	<i>Juan Olvido Perea-García</i>
		12:30	Dark Triad traits are not visible in faces	<i>Luca Kozma</i>
		12:45	Facial appearance and general health biomarkers in women	<i>Bogusław Pawłowski</i>
13:00	Lunch			

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14:00	Session X Morality Chair <i>Konrad Talmont- Kaminski</i>	14:00	Everyday immorality. Testing the Moral Foundations Theory in the context of interpersonal interactions [s]	<i>Michał Misiak</i>
		14:15	How virtue signalling makes us better: Moral preferences with respect to autonomous vehicle type choices [s]	<i>Robin Kopecký</i>
		14:30	Don't Tell, Show! Using techniques of narrative fiction to discover individual differences in mental state attribution [s]	<i>Edit Szabó</i>
14:45	Coffee			
15:15	Session XI Evolutionary aesthetics Chair <i>Karel Kleisner</i>	15:15	Short-term mating orientation predicts men's attentional bias when making attractiveness judgments: Evidence for a common core underlying unrestricted sociosexuality, self-perceived mate value and narcissistic admiration [s]	<i>Linda H. Lidborg</i>
		15:30	Cues of facial attractiveness and sex typicality compared across five cultures [s]	<i>Vojtěch Fiala</i>
		15:45	Cluster definition of art as a meeting point of analytical aesthetics and evolutionary approaches to art	<i>Jerzy Luty</i>
16:00	Best student talk and poster award 2019			
16:30	Closing remarks & Announcing PTNCE 2020			
17:00	PTNCE General Assembly 2019			
19:00	Banquet (till late)			

PLENARY TALKS

Grandmothers and human evolution

Kristen Hawkes

Department of Anthropology, University of Utah, USA

Observations among modern hunter-gatherers combined with evolutionary models built to explain the broad variation in mammalian life histories prompted a grandmother hypothesis. That hypothesis might account for the evolution of human post-menopausal longevity, later maturity, and shorter birth intervals compared to our closest living evolutionary cousins, the great apes. Initially unexpected connections are now emerging between those life history shifts and our ubiquitous habit of pair bonding, our bigger brains, and distinctively cooperative social appetites.



KRISTEN HAWKES is Distinguished Professor of Anthropology at the University of Utah. Her principal interests are the evolutionary ecology of hunter-gatherers and human evolution. She studies age and sex differences in behaviour, using comparisons between people and other primates, paleoanthropology and evolutionary modelling to develop and test hypotheses about the evolution of human life histories and social behavior. Hawkes has pursued ethnographic fieldwork in highland New Guinea, Amazonia, and eastern and southern Africa. She is a member of the Scientific Executive Committee of the Leakey Foundation, the American Academy of Arts and Sciences, and the National Academy of Sciences.

Food insecurity, appetite, and obesity: Evolutionary, epidemiological, psychological and comparative perspectives

Daniel Nettle

The Centre for Behaviour and Evolution, Newcastle University, Newcastle, United Kingdom

Obesity is increasing prevalent in the human population, and the causes of this increase are multifactorial. We currently lack an integrated understanding of the evolved mechanisms that govern, or fail to govern, weight regulation. Fat storage is an adaptive capacity and crucial to survival. In this talk, I will introduce the concept of food insecurity, defined as uncertain or unpredictable access to food. I will argue that individuals should store more fat when facing food insecurity. There is correlational evidence consistent with this in humans, and I present experimental evidence from starlings testing it causally too. I will present some evidence that food insecurity increases appetite, but other evidence suggesting that the weight-gain caused by food insecurity is mediated by activity or metabolic changes rather than increased food consumption. I argue that we need more sophisticated models of the psychology and physiology underlying human appetite and weight regulation than we currently possess.



DANIEL NETTLE is Professor of Behavioural Science at Newcastle University. He is interested in a number of questions concerning development, ageing, health and behaviour in humans and in birds. He is a former president of the European Human Behaviour and Evolution Association, and a member of the editorial advisory board of *Science* magazine.

Behavioral effects of human toxoplasmosis

Jaroslav Flegr

*National Institute of Mental Health, Klecany, Czech Republic
Faculty of Science, Charles University, Prague, Czech Republic*

The protozoan parasite *Toxoplasma gondii* is a typical representative of parasites-manipulators. To get from the body of its intermediate host, usually a rodent, to the intestine of its definitive host, a cat, it modifies the behavior of its host in order to increase the probability of a “predation accident”. *Toxoplasma*-infected rodents have, for example, prolonged reaction times and prefer to stay in places where they smell a cat. *Toxoplasma* infects about 30% of the human population. The people with anti-*Toxoplasma* IgG antibodies in their blood, as well as probably the life-long presence of the parasite cysts in many tissues and organs, including the brain, express specific alterations in behavior, performance and personality. For example, they have prolonged reaction times, a lower IQ, a higher risk of traffic accidents, express lower altruism in experimental games, and lower consciousness and novelty seeking measured with a standard personality questionnaire. Originally, most of the observed changes have been considered as products of the parasite manipulation. An increased level of dopamine in the brain and testosterone in blood was expected to play the role of proximal causes of the changes. However, many personality traits, e.g. extroversion and suspiciousness, are shifted in opposite directions in the infected men and infected women. According to the chronic stress hypothesis, these personality shifts are not the product of the manipulative activity of the parasite, but rather the side-effects of mild but long-term stress caused by the life-long infection. It is known that men and women react to the same chronic stress in an opposite way, which resembles the pattern observed in the infected subjects. Latent toxoplasmosis was considered to be asymptomatic from a clinical point of view. The recent research inspired by our behavioral studies, however, convincingly showed that this is not true and that the infection has a large impact on the physical and mental health of humans.



JAROSLAV FLEGR is an evolutionary biologist and psychologist affiliated to the Faculty of Science Charles University and National Institute of Mental Health, Czechia. He is the discoverer of the effects of latent toxoplasmosis and Rh factor on human behaviour and mental and physical health, as well as the author of the theories of frozen plasticity and frozen evolution. He has published five books and about 150 research articles.

The Cog in the Ratchet: Investigating the cognitive mechanisms underpinning human cumulative culture

Christine A. Caldwell

Division of Psychology, University of Stirling, Stirling, United Kingdom

In human populations, skills and knowledge accumulate over time, such that individuals routinely make use of behaviours and technologies that have undergone a process of invention and refinement spanning many generations. This ratchet-like property of human culture appears to be either rare or absent in other species. In this talk I will discuss how experimental research can contribute to our understanding of the distinctiveness of human cumulative culture. I will describe how cumulative cultural transmission can be studied under laboratory conditions in human participants, and explain how this approach has helped to shed light on the cognitive mechanisms involved. In these laboratory simulations, participants complete simple tasks, with access to information about others' attempts. Solutions tend to improve over time, suggesting that participants who take part later in the transmission chain benefit from the accumulated experience of their predecessors. Capturing the process of cumulative culture in the laboratory in this way makes it possible to manipulate the conditions under which tasks are completed, including the amount and type of social information available. Using this approach we have shown that cumulative culture can arise under a wide range of different learning conditions in adult human participants. Thus, the distinctiveness of human cumulative culture cannot simply be explained by possession of a particular social learning mechanism. I will also discuss studies of social learning in young children and nonhuman primates. Using these populations as comparison groups provides a broader context within which adult human social learning can be understood, and helps to highlight significant details about how adult human learners use social information.



CHRISTINE CALDWELL is a Professor of Psychology at the University of Stirling in the United Kingdom. Her research focuses on social learning and cultural evolution, with a particular interest in understanding the differences between humans and other animals. Her research group uses a range of methods to address these questions, with study populations including nonhuman primates, young children, and adult humans.

**THE PROFESSOR
JAN STRZAŁKO AWARD**



The Professor Jan Strzałko Award for outstanding young scientists

The award was established on September 29, 2016 at the General Assembly of PTNCEE as a commemoration of Professor Jan Strzałko – scholar and academic at Adam Mickiewicz University, Poznań, fellow in physical anthropology, mechanisms of evolution, anatomy and human ecology in the Faculty of Biology, author of numerous publications and entries in encyclopedias and dictionaries, editor and co-author of textbooks, long-time Editor-in-Chief (1986–2011) of the journal *Anthropological Review*, member of PTNCEE merited in „vocation to life” of the Society, and key figure in Polish anthropology.

The Professor Jan Strzałko Award for outstanding young scientists 2017:

Cross-cultural determinants and aspects of smell testing and preferences

Agnieszka Sorokowska

Institute of Psychology, University of Wrocław, Poland

Olfaction allows us to detect subtle changes in our social and physical environment, but sensitivity of the sense of smell varies among individuals. Together with my collaborators we explored the sources of this variation in a series of cross-cultural studies focusing on different aspects of olfactory sensitivity – social odor awareness, olfactory thresholds and odor discrimination abilities. Social odor awareness was tested in a large-scale analysis of self-reports collected from 10 794 participants from 52 study sites from 44 countries all over the world. The results showed that the individual characteristics were more strongly related than country-level factors to self-reported odor awareness in different social contexts. This suggests that people living in different cultures and different climate conditions may still share some similar patterns of odor awareness if they share other individual-level characteristics. Another aspect of olfactory sensitivity, namely threshold for odor detection, was however found to differ between populations. Two studies – one on Tsimane’ of Bolivian rainforest and German people and one involving Poles, Cook Islands inhabitants and Tsimane’ suggest that lifestyle in industrialized populations along with pollution are significant predictors of olfactory abilities. Finally, our cross-cultural study on smell discrimination abilities showed that researchers need to carefully consider possible limitations of the smell testing tools in the cross-cultural context. All presented studies supplement the existing body of literature on differences in olfactory performance across the globe, as well as culturally universal individual factors affecting odor perception.

The Professor Jan Strzałko Award for outstanding young scientists 2018:

Research into the male intra-sexual competition: First years of just scratching the surface

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Social interactions may sometimes collide and result in conflicts which can be resolved, among other means using physical violence. However, physical confrontations entail a risk of injuries and other fitness-affecting consequences. Thus, it seems likely that cognitive and behavioural processes to assess the fighting ability may have evolved through natural selection. They would facilitate adaptive decision making and responses to decrease costs and increase benefits from potential confrontations.

Behavioural characteristics are often ascribed according to physical traits such as appearance. People are relatively accurate in attributions of particular characteristics from facial or bodily traits, like physical strength or propensity for aggression. One issue of previous research in humans was its lack of data about the actual fighting ability or confrontation outcomes. Therefore, we conducted a series of empirical studies testing the perception of formidability, the accuracy of the perception and attempted to identify morphological and acoustical traits related to the assessments and actual fighting performance. To test these issues, we employed Mixed Martial Arts contestants and used their record of victories and defeats.

Even though the substantial body of growing evidence available, we are still at a pioneering stages of discovery regarding intra-sexual competition in men.

SYMPOSIUM
KIN AND HUMAN REPRODUCTION

Will granny save me? The effect of birth status and grandmothers' presence on grandchildren's survival

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A child's short-term survival can be affected by the situation it is born into. Being born out-of-wedlock, as the first child in the family, as a twin, after a short birth interval, or followed by short birth interval all lower the probability of survival. On the other hand, kin, especially maternal grandmothers, can play a crucial role in improving grandchildren survival. Therefore, we predicted that survival of children born with a worse birth status will be improved by grandmother presence.

We analysed a multigenerational dataset from pre-industrial Finland using discrete time-event models. We aimed to test a presence of maternal and paternal grandmothers on grandchildren survival up to 5 years of age.

We found that the presence of a maternal grandmother, and when both grandmothers were alive, increased grandchildren survival by 40% if their birth was followed by a short birth interval (respectively OR = 1.41, 95%CI= 1.04 - 1.91 and OR = 1.40, 95%CI = 1.05 - 1.87). A paternal grandmother alone did not improve grandchildren's survival. However, our results did not confirm our prediction that either grandmother would improve survival of firstborns, twins, illegitimate children, or those born up to 2 years after their siblings. Regardless, we showed that grandmothers can support grandchildren and compensate the mother's investment in the new baby. Our results support an important, though limited, role of grandmothers.

Presence of grandmothers in the neighborhood of their grandchildren and their possible impact on the survival of these children. Case study of Škvorec estate in the 18th and 19th century

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The evolutionary anthropologists formulated the hypothesis (30 years ago) which is called “Grandmother hypothesis”. This theory attempts to explain the menopause which is limited the reproductive life of a womens life. Anthropologists show that menopause allows women to support (to look after) of their own grandchildren (Hawkes, 2003). Studies which tested this theory by using the current subpopulations’ data had similiar results: the presence of grandmother corresponds to the lower age of her daughters (or daughters-in-law) at the birth of their first child and their shorter birth-birth intervals and to lower infant (or child) mortality of grandchildren (e.g. Beise and Volland, 2002). What is the situation at the turn of the 18th and 19th centuries in the Czech lands? How often did maternal or paternal grandmother live close to the birthplace of her grandchild? And what was the effect on the survival of this child? Did exist some differences between families according to socioeconomic status in this issue? The aim of this paper is discovered the possible effect of maternal and paternal grandmothers on infant (child) survival at the turn of the 18th and 19th centuries in Škvorec manor as an example rural locality in the Czech lands.

Charlie Bucket effect: Two grandmothers decrease survival probability

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Grandmothers contribute to the survival of their grandchildren. Here we tested whether and how is this effect modulated by socio-economic status (SES) of parents, total number of available grandmothers and the grandmother's side (maternal vs paternal).

Parental social status, grandmother presence and survival until the age of 5 was unambiguously identified in 7066 individuals (2836 high SES farm holders, 2356 intermediate SES cottagers and 1874 low SES houseless lodgers) born in West Bohemia between 1709-1834. We controlled for the relatedness between the individuals. The association between the grandmother presence in child's proximity and child's survival from 0 to 5 years of age was evaluated.

Cox proportional hazards were evaluated along 3 orthogonal contrasts: Firstly, children that had at least one grandmother vs children that had none, secondly, children that had both grandmothers vs children that had only one, thirdly, children that had only maternal grandmother vs children that had only paternal grandmother. We used two different criteria for grandmother proximity: presence within the microregion and presence within the village of birth. Both methods gave similar results when it came to the first contrast.

Contribution of maternal and paternal grandmother did not differ significantly. Having any grandmother significantly increased grandchildren survival as compared to none (HR=1.23, 95% CI = 1.02-1.48, respective HR=1.22, 95% CI = 0.99-1.51). Unexpectedly, we found strong negative effect in grandchildren who had both grandmothers living within the same village as compared to the individuals with only one grandmother living in such close proximity (HR=0.51, 95% CI = 0.33-0.79). These differences were present in houseless lodgers (lowest SES category) only. The observed effect can be due to the competition for resources among poor relatives within a restricted area.

Grandpas can do the job similarly well: Positive effect of grandfather's presence on offspring's survival

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A positive effect of grandmother's presence on probability of survival of their grandchildren is well documented. In contrast, there is no agreement whether grandfathers similarly contribute to the grandchildren survival. In the current study we employed large historical dataset to assess effect of grandfather presence on grandchildren's survival from birth to five years. We further tested differences between paternal and maternal grandfathers and controlled for family socio-economic status (SES).

The dataset was obtained from church registers and consisted of 7066 individuals (2836 high SES farm holders, 2356 intermediate SES cottagers and 1874 low SES houseless lodgers) born in West Bohemia between 1709-1834. We employed Cox regression with three orthogonal contrasts: i] no grandfather vs. at least one grandfather present, ii] one grandfather vs. two grandfathers present and iii] maternal vs. paternal grandfather present.

We did not find the effect of grandfather's presence in families with high and intermediate SES. In contrast, in low SES families grandfathers increases probability of grandchildren survival. Having any grandfather significantly increased grandchildren survival as compared to none (HR=1.25, 95% CI = 1.04-1.49). The contrasts distinguishing between two and one grandfathers (HR=1.01, 95% CI = 0.68-1.50) and maternal and paternal grandfathers (HR=1.20, 95% CI = 0.82-1.66) were not statistically significant. This effect was not only due to collinearity with grandmaternal availability. Similar test with orthogonal contrasts did not find a difference between the presence of grandmother and grandfather neither on maternal (HR=1.04, 95% CI = 0.75-1.43) nor on paternal (HR=0.84, 95% CI = 0.57-1.22) side.

Our results indicate that the contribution to the offspring survival might not be specific to grandmothers and based on local condition might be substituted by other family members such as grandfathers.

Mortality of orphaned children (West Bohemia, 1700–1850)

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The aim of the planned presentation is to analyse mortality conditions among these children in various types of families. The basic analysis will focus on whether and in what ways child mortality in complete families, where children were raised by their biological parents, differed from families in which one or both parents died. Next, we will discuss whether mortality rate was influenced by the fact that a child lost his/her father or mother and whether these potential differences depended on the age of the child when he/she became orphaned. We will look at whether orphaned children had at least one available grandmother who could, at least in theory, care for them, and whether it is possible to statistically prove any correlation between the presence of a grandmother and child mortality. We will therefore conduct our research in the broader framework of the “grandmother hypothesis”, which focuses on one of the fundamental parameters of human reproduction, namely on the fact that women are not able to reproduce up until their death because their reproduction period ends before age 50. This hypothesis suggests that the reason for menopause in women is to fully use their potential to help secure the reproduction of their children. By participating in the care for her grandchildren, a grandmother eventually ensures the survival of more of her descendants than if she were able to give birth to her own offspring until her death. Further on, we will also try to establish if mortality conditions differed based on whether the remaining parent remarried or not. Our analysis will be built on data from family reconstruction based on excerpts from West Bohemian parish registers (1700-1850). The database contains sixteen thousand individuals whose broad relational ties have been reconstructed. The main aim of the paper is to answer the question of whether biological ties were crucial in pre-industrial society or whether and to what extent they could have been replaced by other forms of relationships.

SYMPOSIUM
THE EVOLUTION OF RITUAL
BEHAVIOUR

Effects of Kavadi ritual on status management

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Extreme rituals that involve bodily mutilation and suffering may seem puzzling from an evolutionary perspective. However, in the past two decades, researchers have proposed several potential benefits of participation in extreme rituals related to cooperation, sexual selection, and psychophysiological health. Focusing on the first communicative function, we examined the impact of socio-economic factors on the quality and volume of commitment signaling in the context of the Thaipusam kavadi. We show that participants' relative position in the social hierarchy affects the form and intensity of ritual signaling. Specifically, low-status males participate more often, endure more piercings, invest more time in preparations, and carry larger structures during the procession. Furthermore, signaling is costlier when there are more opportunities for reception, that is, among individuals who participate in public, compared to private, rituals.

Effects of Kavadi ritual on mate attractiveness

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From the standpoint of human mate choice, male traits that can be deemed as behavioral, sexually selected signals include physical prowess, risk-taking, or bold behavior. Collective rituals involving intense physical effort and suffering may provide a unique arena for displaying behaviors associated with these traits. Consequently, the intensity of participation in such rituals might serve as a cue in mate selection, reflecting the individual's non-obvious qualities. However, there is a paucity of research on the association between the cost of ritual participation and the perceived attractiveness of an individual. To examine the causal relations between ritual displays and partner choice, we conducted an experimental study in the context of the Kavadi ritual performed by Mauritian Tamils. In this experiment, we asked female Tamil participants to rank male Facebook profiles according to their long- and short-term partner preferences. To investigate the effects of ritual performance, we manipulated Facebook profiles such as to signal different ritual costs. Preliminary results suggest that Facebook profiles signaling high ritual investments and extravagant displays are indeed considered attractive in potential partners; however, the results of the full analysis that will be presented during the talk still have to lend support to this conclusion.

Effects of Kavadi ritual on psychophysiological well-being

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Tackling the evolutionary puzzle of extreme rituals and their potential benefits, this paper will report the results from a collaborative investigation of health outcomes of participation in one of the most extreme rituals worldwide, the Kavadi performed by Tamils in Mauritius. Extreme rituals that involve bodily mutilation and suffering entail high risks, but practitioners often claim that they convey health benefits. What is the evidence for these claims? Over a two-month period, we monitored activity and physiological responses of ritual participants and a control group, and obtained assessments of perceived health and quality of life. Performance of this physically demanding ordeal had no detrimental effects on physiological health and was associated with improvements in psychological well-being (compared to a control group). Furthermore, individuals who experienced health problems and/or were of low socioeconomic status sought more painful levels of engagement, which were associated with greater improvements in psychological well-being. We suggest several bottom-up and top-down mechanisms facilitating these effects with a special focus on auto-signaling and consecutive self-enhancement enjoyed by participants.

A multi-level selectionist approach to religious ritual behaviour

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I argue for an holistic multi-level selectionist approach to understanding religious ritual behaviour. I argue against the idea that there is a single proximate or ultimate explanation of religious ritual behaviour that can be championed by any one specific discipline such as the cognitive science of religion, philosophy, psychology, or any one specific idea such as gene-culture co-evolution, costly signaling theory, or group-selection, as far as explaining religious ritual behaviour is concerned. While all these disciplines have things to say which are relevant and probably true, a multi-level selectionist approach to religious ritual behaviour provides a framework for understanding them best as evolutionary phenomena.

Rigidity and automaticity in the context of genesis and function of ritualized behavior

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Automatic behaviors can be characterized by four features: unconsciousness, high speed, efficiency and goal independence (Moors & De Houwer, 2006). Rigid behaviors are behaviors whose course and circumstances of occurrence are highly repetitive or invariable. Many automatic behaviors can be described similarly. Therefore, can rigidity be regarded as one of the characteristics of automatic behavior associated with a wider category of goal independence? It seems not, at least not always. The essence of rigidity is difficulty in changing behavior. Behavior can be rigid when it is difficult to control its course in order to alter it. This is the case of highly automatized behaviors when there is a problem with deproceduralization. On the other hand, rigid behavior is often accompanied by increased control aimed at matching behavior to a pattern, or at performing it according to a particular scheme. The relationship between rigidity and automaticity is especially interesting in the context of research on ritualized behavior. Ritualized behaviors are claimed to be rigid but not automatic. However, performing a behavior in an invariable way (i.e., rigidly), should facilitate automation. In the context of Boyer and Lienard (2006) as well as Talmont-Kamiński (2016) theories it is discussed, if we can distinguish automatic ritualized behaviors.

Boyer, P., & Lienard, P.(2006). Why ritualized behavior? Precaution systems and action parsing in developmental, pathological and cultural rituals. *Behavioral and Brain Sciences* 29, 1–56.

Moors, A., & De Houwer J. (2006). Automaticity: A theoretical and conceptual analysis. *Psychological Bulletin*, 132, 297–326.

Talmont-Kaminski, K. (2016). Malinowski's magic and Skinner's superstition: reconciling explanations of magical practices. In *Mental Culture* (pp. 108-119). Routledge.

What's under the hood?

Rituals and the mechanisms that make them go

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Like many other human behaviours, rituals exhibit both bewildering variety and surprising similarity across the world's cultures. Understanding the reasons for both the variety and the similarity requires a detailed understanding of the interplay between elements of the rituals in their cultural contexts and the precise cognitive mechanism that underlie them.

In my presentation I will start by considering the traits that are thought to characterise ritualised behaviours and consider what mechanisms generate those traits and, in effect, how they are related to each other. The picture that arises is that several different mechanisms are involved, the key connection involving environmental conditions. This connection – the appearance of threat – plays a fundamental role in determining the functions to which the resulting behaviours can be put.

TALKS

Investigating adaptive functions of male and female genital mutilations: A phylogenetic comparative study

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Male and female genital mutilations (MGM and FGM) are extremely costly in terms of health, survival and reproduction. As such, they call for a satisfactory evolutionary explanation. Previous studies have suggested that both MGM and FGM are adaptations to sexual conflict, namely concerns about paternity certainty. Other studies have argued that MGM and FGM are costly signals aiding in intra- and inter-group conflict. Here, we investigate evolution of these cultural practices and re-examine the existing hypotheses using phylogenetic comparative analysis.

Data were collated from D-PLACE, anthropological, ethnographic and demographic sources and recently published studies. Resulting two datasets consist of 186 and 621 sets of a time-calibrated supertree based on genetic and linguistic data were used as a phylogenetic control. Maximum likelihood reconstructions of ancestral state for MGM and FGM were performed (phytools). A series of phylogenetic logistic regressions was run (phylolm) to find models and predictors that best fit the distribution of MGM and FGM in the data. Best models were selected according to AIC score and explained variance of models/predictors was based on R² (rr2).

Reconstructions of ancestral states revealed multiple independent origins of MGM in Africa and Remote Oceania. Multiple origins of FGM are restricted to Africa. The regression results show that the incidence of MGM is best predicted by the presence of patrilineal descent system, male scarification practices and frequency of warfare. Incidence of FGM is best predicted by polygynous marriage with co-wives occupying separate quarters, female scarification, patrilocality and bride-price. Therefore, it seems that MGM is not primarily an adaptation to sexual conflict, but rather a costly signal of group commitment in patricentric societies. On the other hand, FGM is a possible adaptation to paternity uncertainty in polygynous societies. The results also suggest that MGM and FGM evolved from general body scarification.

General average from the standpoint of evolutionary studies

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The paper addresses the issue of General average, i.e. a principle of maritime law whereby all stakeholder in a sea venture proportionally share any losses resulting from a voluntary sacrifice of part of the ship or cargo to save the whole in an emergency from the point of view of evolutionary studies. The primary source of knowledge of the terms of jettison and other risks associated with navigation in maritime law is frequently called the ancient Rhodian maritime law (i.e. *lex Rhodia de iactu* [Rhodian law about jettison]). Its diffusion is however doubtful and the different laws concerning jettison in the past were possibly also the effect of parallel development, while they varied widely on details of procedure and events covered by the rulings. All of them share however the similar concept: if the income was common, so should be the loss and the expenditure and sacrifices made for the common safety of the parties interested in the maritime adventure were to be paid by (some of) the parties who had benefited therefrom. It means that the core of all rules concerning general average in the past and today is fairness, what corresponds with deep evolutionary roots of sense of justice among humans. In conclusion, the author advocates the need to resort to the achievements of evolutionary psychology in legal studies. In his opinion, this would serve to verify and support the thesis that certain solutions developed in the past are universal as well as to promote the idea of returning to the unity of knowledge (consilience).

Identifying post-marital residence patterns in prehistory: A phylogenetic cross-cultural analysis

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Post-marital residence patterns are an important element of human social organization. However, their identification in prehistory is challenging, as they leave almost no direct traces in the archeological record. Cross-cultural researchers attempted to identify cross-cultural correlates of post-marital residence through statistical analysis of ethnographic data. Several studies have demonstrated that in agricultural societies large dwellings (over 60 m²) are strongly associated with matrilocality, where spouses live in the same community as the wife's family. In contrast, smaller dwellings are strongly associated with patrilocality, where spouses live with or near husband's family. This finding was positively received by archeologists, as the size of houses on settlements is usually easy to detect, and the association has been already applied in several archeological contexts, including historical northern Iroquoian groups, Chaco Canyon region, Hohokam culture or Neolithic Greece. The previous studies were methodologically limited because they included geographically imbalanced samples of societies, did not account for greater variability in post-marital residence patterns beyond matri- and patrilocality, and did not account for the statistical non-independence of societies due to shared ancestry (Galton's problem). In this study, we perform a series phylogenetic comparative analyses to test for the association between post-marital residence and house size using a sample of 86 pre-industrial societies and a time-calibrated "supertree" based on genetic and linguistic data as a phylogenetic control. Our analysis includes additional explanatory variables, specifically building material, presence of agriculture, and stability of settlement. Our results confirm a strong cross-cultural association between matrilocality and house size, although very large dwellings (over 120 m²) can be associated with all types of post-marital residence. The effect of agriculture on house becomes insignificant once the stability of settlement is taken into account. Our results suggest that reliable inferences about social organization can be made from archeological record.

Cultural transmission in local communities

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The transmission process indicates how dynamic a local culture is; it is studied in contemporary global world civilisation as well as in traditional, slowly changing localities. Generational transmission of culture presented the primary function in continuity process of cultural information distribution (Cavalli-Sforza & Feldman, 1981) (Boyd & Richerson, 2005), (Bradie & Bouzat, 2015) knowledge dissemination, and made population stable and life-sustaining.

In the empirical part author performed a field research in small, scattered mountain localities of Central Slovakia, which, in certain time periods, become abandoned (Lieskovský, et al, 2015); some even disappear, or vice versa, become re-discovered, and consequently, they develop. From the point of view of anthropological theories, local culture was studied as a distributive model (Rogoff, 2003) of cultural, locally significant, information.

In the main part, there are three natural generations defined in the presentation (Hallgrimsdottir, 2012). Generation 1 (Gen 1) – the generation of grandparents, which shares the largest number of common contents of the local memory. Generation 2 (Gen 2), the generation of parents, which has created their awareness not only within the local contexts but also in connection with identification signs of the global generation. The generation of sons and daughters, Generation Y (Gen Y), have a new opportunity of sharing common generation values globally via technical communication.

The chosen methodology is described in the slides of ethnographic data (O'Reilly, 2012) and their analysis (Schensul & LeCompte, 2016). ATLAS.ti was the chosen as a methodical tool – the coding technique (di Gregorio & Davidson, 2008) is labelled according to OCM coding scheme and created in dynamic models.

The results of the field work point out the ratio between the individual modes of transmission. The horizontal transmission of local culture is much less present when compared with the vertical and indirect transmissions. Nowadays, the transmission of culture is connected especially with an expansion of indirect ways of culture transmission, predominantly via technical communication. The concluding summaries present visual dynamism of cultural transmission in local communities.

National income inequality predicts cultural variation in mouth to mouth kissing

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Romantic mouth-to-mouth kissing is culturally widespread, although not a human universal, and may play a functional role in assessing partner health and maintaining long-term pair bonds. Use and appreciation of kissing may therefore vary according to whether the environment places a premium on good health and partner investment. Here, we test for cultural variation (13 countries from six continents) in these behaviours/attitudes according to national health (historical pathogen prevalence) and both absolute (GDP) and relative wealth (GINI). Our data reveal that kissing is valued more in established relationships than it is valued during courtship. Also consistent with the pair bonding hypothesis of the function of romantic kissing, relative poverty (income inequality) predicts frequency of kissing across romantic relationships. When aggregated, the predicted relationship between income inequality and kissing frequency ($r=.67$, BCa 95%CI[.32,.89]) was over five times the size of the null correlations between income inequality and frequency of hugging/cuddling and sex. As social complexity requires monitoring resource competition among large groups and predicts kissing prevalence in remote societies, this gesture may be important in the maintenance of long-term pair bonds in specific environments.

The comparison of the Additive and Threshold Models of mate choice

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Mate choice is assumed to either follow the Additive Model, which predicts that a potential partner with the highest sum of preferred characteristics will be chosen over a candidate with a lower overall score. Alternatively, the Threshold Model predicts that individuals have a certain threshold for each characteristic and potential partners who do not reach this threshold are rejected. Currently, it is not clear which of these two theoretical models has a higher predictive value. Thus, we conducted five variants of a vignette study to thoroughly investigate the question.

Vignettes describing potential partners were presented to 1506 participants (65% women). The vignettes were either considered as desirable by the Additive model or by the Threshold model but not by both. Five variants of the study were created to control for potential methodological effects in the participants' ratings (using different scaling, either by text or denoting by stars). Each person was randomly allocated to any of the five variants of the study. The respondents rated how desirable they found the described partners and whether they would consider a long-term relationship with them. They also rated the general importance of each trait in an ideal partner, as well as their own mate value.

All the five variants of the study showed an overall preference for vignettes not violating thresholds in any characteristics (i.e., supporting the Threshold Model). However, participants also differentiated between the level of violation and the relative importance of the characteristics, which reflects a 'dosage-response effect', i.e., a Weighted Additive Model. The results also suggested that the overall score of the potential partner plays a role once the minimum standards are met.

All five studies show similar pattern primarily supporting the Threshold Model. Nonetheless, not all the characteristics are of the same importance, thus may have different threshold for acceptance. In the light of our results, mate choice seems to be more complex than just one of the tested models.

Links between urbanization in modern Russia and the intensity of sexual selection and polygyny among males

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The ubiquitous population shift to urban areas all over the globe, and the concurrent growth in population density, have had a profound effect on the nature of the human environment.

However, the theory of sexual selection predicts that important aspects of the mating system such as intra-sexual competition, mate choice (including mutual mate choice) and parental care can be density-dependent (Kokko and Rankin 2006; Jennions and Petrie 1997).

We checked these theoretical predictions using a sample of Russian men (273) who completed an anonymous online survey in 2019. The obtained data indicates that higher levels of urbanization in the subject's place of residence corresponds to a material increase in the number of sexual partners (within the preceding year) which is in turn associated with a growth in variability in individual levels of pre-copulatory sexual success. We concluded that the pressure of sexual selection among males could rise in a big city or a metropolis.

At the same time, the data reveals that a male's mating behavior is significantly correlated with his age. The maximum number of sexual partners in a more densely populated environment, as well as the concomitant variability in sexual success, was reported by men over 40 years old. At the same time, the sexual behavior of men under age 30 showed significant resistance to environmental changes. Young males were more prone to having a monogamous model of sexual behavior (one partner in the past 12 months).

Our finding shows that the process of sexual selection is heavily influenced by the number of potential mates; however, the stages in an individual's life history are associated with varying levels of susceptibility to these environmental challenges.

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The reason to propose is... not related to HLA

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Human mate choice is driven by a number of factors, and enhancing chances for healthy offspring is one of them. The resistance against pathogens is partly determined by the genetically encoded HLA-system and HLA heterozygosity is assumed to be beneficial. Consequently, it can be expected that humans prefer HLA dissimilar partners. Indeed, some evidence indicates women are able to perceive HLA similarity out of male body odors and that they prefer odors of HLA-dissimilar men. It is, however, unclear whether the preference transfers to actual mate choice and to marriage. We compared HLA profiles [HLA A, B, C, DR, DP, DQ] of 3742 heterosexual, married couples to random mating and found no evidence for HLA-dissimilar mating in any of the loci as well as all together. In contrast, the likelihood was even slightly shifted towards similarity. We assume that in group favoritism overrules the HLA-preference in actual mate choice. Oral contraception at the time of relationship formation slightly enhanced the changes for HLA-similarity in the couples.

Vicinity of obscenity: Inductive reasoning about female pornography preferences

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Evolutionary reasoning and research makes clear predictions about human sexual behavior. As men have a lower parental investment, they should be on average far more likely to engage in short term mating strategies compared to women. Furthermore, men should be the less choosier sex when it comes to mate choice. These preferences seem to transfer to the use of sexual explicit media content. Indeed, Price et al. (2016) showed that on average, men consume far more pornography than women.

However, when it comes to more extreme sexual content, sex differences in the frequency of consumption fade or can even reverse. Women who consumed pornography on a highly-frequented pornsite were for example 63% more likely to view “rough sex” and 75% more likely to view “hardcore” pornography than men (Pornhub Insights, 2018). It seems that women who watch pornography are a minority within their own sex. But when women do consume pornography, these women have a higher probability to watch more extreme content compared to men. This basic pattern was replicated in our research (N > 1000) and further international studies that also utilized large sample sizes.

Given the apparent empirical phenomenon, we see no current biological informed theory that would be suitable to explain this phenomenon. Cultural theories on the other hand would predict the opposite pattern – that men should watch more extreme content. Our aim is to derive a new theory that fits in the well-researched frame of evolutionary/biological informed human mating theories.

An ultimate-level account of strategic language use in conversation

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Cost-benefit logic is fundamental for understanding animal behavior, and in particular is the cornerstone of signalling theory – which is the accepted explanatory framework for accounting for animal communication (e.g. Maynard Smith & Harper 2003, Searcy & Nowicki 2005, see also Krebs & Dawkins 1984), but which struggles to account for language use in humans (cf. Wacewicz et al. 2017, Wacewicz & Zywczyński 2018). Cost-benefit approaches to language use are still in their nascence; most of them model humans only as communicative agents with communicative goals (e.g. being understood) and fail to account for speakers as social agents with social goals, and for language use as a means of achieving those goals. By interfacing linguistic and nonlinguistic behavior, linguistic politeness (LP) offers a very special vista of language, amenable to the cost-benefit logic. There are no definite accounts of the costs and benefits associated with LP use, but I propose to group the explanations latent in the literature into two families, which appeal respectively to direct versus indirect reciprocity.

Firstly, being linguistically polite may directly convert to social standing (decreases the status of the user of LP, increases the status of the addressee of LP). This possibility is suggested in a number of approaches (e.g. Brown & Levinson 1987, Zahavi & Zahavi 1997, Danescu-Niculescu-Mizil et al. 2013) and has very recently been developed into a self-standing model of how thanking and apologising may directly convert into an image-based social currency (Chaudhry & Loewenstein 2019).

Secondly, and more interestingly, LP may rely on reputational mechanisms such as obligation. In a world where “everyone knows together that everyone expects helpfulness and cooperation, and when everyone knows together that everyone is concerned with reputation” (Tomasello 2008: 214), the use of LP may signal conformity to the norms, i.e. playing by the rules of the cooperative community.

My talk will discuss these two groups of explanations from an ultimate-level (fitness-consequences) perspective. I will detail the conditions that each of them places on polite language use to be an (evolutionarily) stable behavioral strategy, and also specify the empirical predictions that each of them generates. This research was supported by the Polish National Agency for Academic Exchange.

The influence of socio-demographic factors on language skills and ethnobiological knowledge of contemporary populations in Papua New Guinea

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With over 800 languages, Papua New Guinea harbors the highest ethnolinguistic diversity in the world, but this diversity is increasingly threatened by the rapid social, cultural and economic changes in the country. This paper tries to identify socio-demographic factors that cause the decline in native language skills and the associated ethnobiological knowledge among the young generation in PNG.

Using a structured questionnaire, upper secondary school students (n=4220) in 17 schools in three culturally different provinces of the country were tested for their language skills (measured as the ability to name 24 human body parts) and ethnobiological knowledge (measured as the ability to name native bird species and list traditional uses of native plant species), and assessed in relation to their socio-demographic information.

Our results show that spending preschool years in rural areas greatly support language acquisition and proficiency. This was also true for ethnobiological knowledge acquisition. Students who speak vernacular language at home showed higher level of language acquisition and proficiency than those speaking English or Neomelanesian Pidgin at home. There was a negative correlation between language skills of students and education level attained by their parents. This was also true for ethnobiological knowledge. Ethnobiological knowledge was strongly dependent on language proficiency. New skills, including phone and computer use skills, were negatively associated with bird knowledge, while hunting skills were positively correlated with bird knowledge. The students from families where each parent spoke a different language performed worse than students from single language families. At the same time, the number of bilingual families is already high and increasing. These results suggest that recent cultural and socio-economic changes have complex, but largely negative effects on indigenous language acquisition and proficiency, and ethnobiological knowledge.

Rhythm syntax in music as an evolutionarily old communicative tool

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Music, similar to language, is an example of the Humboldt system which consists of a restricted number of units organized according to particular rules. The arrangement of these units is often called 'syntax' and it necessitates a special form of neural processing. The neural processing of musical syntax is based on two types of analysis (i.e. spectral and temporal analyses) which result in the experience of musical pitch and rhythm hierarchies. However, while the hierarchical schemes of discrete pitch patterns seem to be unique to music, the rhythm patterns can be produced both in the auditory and motor domains by the means of vocalizations and body movements respectively. The main aim of this presentation is to propose that the syntactic processing of rhythm hierarchy in music is based on a functionally different mental tool than the syntactical processing of musical pitch. Therefore, in contrast to the standard view that musical syntax is a relatively uniform entity it is suggested that the experience of rhythm in music relies on a qualitatively distinct ability that is separated from the ability to process pitch hierarchy. As a result, both pitch syntax and rhythm syntax should be treated as separate phenomena. Moreover, the cross-modal character of rhythm syntax allows us to 'translate' musical patterns into dance movements and vice versa. This view is supported by neuroimaging studies which reveal activity within the basal ganglia and the motor cortex during the recognition of rhythm patterns in music. These results also suggest the possible different roles that are played by different cortico-subcortical loops in the processing of various musical features. The different involvement of three cortico-subcortical loops (i.e. motor, associative, and limbic loops) in the processing of musical syntax will be discussed. In addition, the possible evolutionary origin of these two abilities will be presented. Although some scholars have proposed that musical rhythm is evolutionarily older than musical pitch the question of their functions remains open. The possible solution of this issue is that both rhythm and pitch syntaxes are related to a consolidatory function. However, the difference between these syntaxes can be based on the level of sublimation. While rhythm syntax is simpler and cross-domain, the pitch syntax is more elaborate and solely auditory.

Rates of diversification of ethnolinguistic groups, informed by a dated global phylogeny of human populations

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With over 7,000 ethnolinguistic groups worldwide, human cultural diversity is comparable to the species-level diversity of tetrapod classes. Although many phylogenies of human populations based on genetic or linguistic data were published over the past decades, there is still no dated global phylogeny of human populations available, hampering our ability to study cultural evolution on a global scale and account for non-independence in cross-cultural analyses. Here we present a supertree of 1,960 human ethnolinguistic groups covering all world regions and ca. 100 language families and language isolates. This supertree is based on 388 genetic and linguistic source trees, published between 1990 and 2017, and time-calibrated using 265 node-age constraints derived from genetic, linguistic, archeological, historical and epigraphic data. We inferred diversification rates from this tree and found that diversification rates varied dramatically across the tree clades and over time. Specifically, diversification rates show a gradual decline toward the present, punctuated by an abrupt increase ca. 10,000 years ago. This suggests the major role of Neolithic expansions in forming the present-day ethnolinguistic diversity. Projected onto the world map, the results indicate extraordinarily high rates diversification in the tropical regions (e.g., Central and northern South America, Southeast Asia) and in montane regions (e.g., Andes, Himalaya). Temperate regions show only moderate diversification rates, whose variation soar significantly toward the tropics, where diversification rates can be both very fast and relatively slow, indicating that the tropics act both as a cradle and a museum of cultural diversity.

Pleasing others to improve indirect reciprocity, an agent-based simulation

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Indirect reciprocity plays an important role in human cooperation. Simplified, it means you help me, therefore somebody else will help you (in contrast to direct reciprocity: you help me, therefore I will help you). Indirect reciprocity can be achieved via reputation and norms, leading to cooperation between individuals who follow the norms and therefore keep good reputations. Using agent-based models it was demonstrated that strategies relying on these principles can maintain high levels of cooperation and cannot be invaded by other strategies such as pure defectors. However, this is only the case if reputation is modeled as publicly agreed upon. If agents have private opinions and therefore the reputation of one individual might be inconsistent, cooperation breaks apart. We show that trying to please others improves indirect reciprocity under these conditions.

We modeled reputation as a binary state (good or bad). It is determined by actions in a donation game (agent-A may pay a cost to grant agent-B a benefit, which is bigger than the cost). It was shown that norms as simple as ‘donating is good, refusing is bad’ do not allow stable cooperation. Therefore, the norms also consider the prior reputations (e.g. refusing to help a bad agent is not considered bad). Models that tested what should be considered good or bad in which situation have demonstrated that eight combinations of rules can result in populations with stable indirect reciprocity (“leading eight”). We expand these strategies by allowing agents to ask others for their private opinion (e.g. if they believe the recipient to be good or bad) before they decide to donate or refuse. This way they can please other agents and earn a good reputation. With simulations of finite populations, we show that pleasing can improve evolutionary stability and levels of cooperation for most leading eight strategies. Even trying to please just a few agents has positive effects. Implications for human behavior would be premature, but our findings show case the possibility that opportunistically doing what others deem ‘good’ might have some positive effects on cooperation and the society.

Promoting cooperation between groups: Can subclinical psychopaths be the nice guys?

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Theoretical background: members of the Dark Triad (DT) are consistently found to follow a predominantly individualistic strategy in social exchange situations (Curry, Chesters & Viding, 2011; Jonason, Li & Teicher, 2010; Malesza, 2018). Individuals who score high on subclinical psychopathy scales have been shown to demonstrate a high level of impulsivity and risk-taking (Jones & Paulhus, 2011; Miller & Lynam, 2015; Vize, Lynam, Collison & Miller, 2018) as well as increased reward sensitivity (Birkás & Csathó, 2015; Jonason & Jackson, 2016).

Hypothesis: members of the DT may act prosocially if their self-interest aligns with the group's interest. Specifically, an immediate albeit risky reward may motivate subclinical psychopaths to abandon the selfish strategy and invest in the common account instead.

Method: based on Böhm, Rusch, & Güerck (2016) we created a new experimental game, the Intergroup Prisoner's Dilemma – Maximizing Mutual Gain (IPD-MMG). Participants (N = 68) were invited to the lab in groups of 4 and asked to play against another (fictitious) group of four people. In both rounds of the game subjects had to allocate their resources among three possible locations representing the i) selfish, ii) in-group favoritism and iii) uncertain mutual gain strategies. Finally, they were asked to fill out the Short Dark Triad and the BIS/BAS questionnaires.

Results: participants high on psychopathy (P) allocated significantly more resources to the third location (uncertain mutual gain) in the first round of the game. They also obtained a higher score on the BAS scale than individuals low on psychopathy.

Conclusion: even though participants were not allowed to discuss their strategy neither within their group nor with the other group, high P individuals chose to allocate nearly all of their resources to the third location that tempted with the highest reward, but also depended on the other group's strategy. The increased impulsivity, risk-taking and reward sensitivity of high P individuals provide a plausible explanation for these results.

Leaders and Cheaters: Nonverbal communication and genetic trail in male group cooperation

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Growing evidence today suggest that group cooperation is more characteristic for men, than for women, which has certain evolutionary basis. Therefore research in male group cooperation is of particular interest. In current study we investigate individual leader potential of young men in group cooperation. Design of the study was based on iterated ‘Public Goods Game’ played ‘face-to-face’, in real-time, within groups of 4 male strangers. Subjects were young men ($N = 100$, age: 20 ± 2 y.) of Mongoloid origin. During experimental interactions they were suggested to invest funds (real monetary equivalents, which were put at their disposal) into common pool, which was subsequently doubled and divided equally between group members. Prior to decisions participants could negotiate to arrive at some consensus, but finally all decisions were made privately. Due to iteration this game allowed estimating individual cooperative strategies, such as ‘conditional cooperator’, ‘altruist’, ‘selfish agent’, ‘cheater’. Each strategy was characterized by certain algorithm of decisions across all rounds. Experimental interactions and negotiations were video-recorded (including sound-tracks). Based on negotiations’ analysis (initiations, meaning of suggestions, intensity of exhortations, etc.) we have distinguished 3 types of individuals with regard to leadership skills. Nonverbal communication during experimental interactions was coded using video-records and included intensity of positive expressivity (several types of smiles and laughter), face touches, stress movements, and talkativeness. Apart from experimental procedures participants completed personality test (NEO-FFI), and provided samples of buccal epithelium for genetic analysis. Our results revealed that each of 3 types of individuals (based on leadership skills) was characterized by certain set of independently measured traits: cooperative strategy, nonverbal features, personality traits, and variation in Oxytocin receptor gene (SNP rs53576). Results are discussed from evolutionary perspective. The study was supported by Russian Science Foundation (project # 18-18-00075).

Wanna be cool? Be as altruistic as your friends! Norm followers, cheaters and costly signallers in a sport charity campaign

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Everybody wants to be cool or using a scientific term, a good reputation is crucial for humans. A person with high reputation enjoys several benefits for example extra help from their friends, also, as field studies showed, has higher fitness. Therefore, all human beings try to achieve a higher reputation than their friends. A potential way to build reputation is to be altruistic and let our friends know how altruistic we are. To study how humans use altruism to build their reputation is difficult. It is well known that humans change their behaviour in laboratory condition or if they assume that they are under observation. Therefore we aimed to find a real-life situation where subjects do not have a clue about observation. We used data from a charity situation where donators were able to decide whether they want to publish the amount donated and/or their name on a webpage. We hypothesised that average donators publish all the information, while generous donators or those who give less than average show only their name and hide the amount to mask the effort was put on the charitable act. Our results were slightly different. Average and under-average donators do behave as we assumed, but extremely generous donator instead of hiding the amount and publishing their name, rather published only the amount and keep their name in secret. The explanation of their behaviour could be that they wish to advertise the foundation while try to avoid potential social punishment.

We also studied how fundraisers use their fundraising act to build a reputation. The fundraisers enter running races and call upon their friends to symbolically adopt a kilometre donating to the foundation. We investigated whether the act of collecting donation or the distance run is the important factor to gain a better reputation.

Storytelling and messages of cooperation – insights from literary studies

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The adaptive value of storytelling has long been a subject of scientific inquiry (see e.g. Boyd 2009). As an evolved behaviour, storytelling is often linked to cooperation and coordination of social activity, which has been confirmed with anthropological observations of hunter gatherer societies. This study is based on the findings of one such observation (Smith et al. 2017) that identified plots of the Agta stories, the social norms they promoted and the cooperation-related mechanisms they referred to - which can overall be conceived of as “messages of cooperation”. Although hunter gatherer groups have a distinct social system (see e.g. Dyble 2015), these messages turned out not necessarily culture-specific, as they have been identified as “cooperation”, “social equality”, or “group cohesion” in a most general sense. This study assumes that: 1) these hunter gatherer stories follow a cross-cultural pattern, 2) storytelling is a human universal (see e.g. Brown 1991), and 3) taking 1) and 2) into account, the same messages of cooperation should be identifiable in storytelling practices of other cultures, one of them being literature. The specific research question for this study is: Are the same messages of cooperation present in the Western literary tradition? In order to provide an answer, a corpus of 50 texts of the Western canon has been composed, based on Harold Bloom’s “The Western Canon” (see Bloom 1991). Then, the findings of the 2017 study have been adapted for annotation of the corpus with tags such as “cooperation between the sexes”, “friendship”, “group cohesion”, “sex equality”, and “social equality” for promoted norms and “advantageous inequality aversion”, “calculation and comparison of payoffs to cooperation vs. competition”, “group identity”, “reverse dominance hierarchy”, and “social acceptance” for mechanisms (see Smith et al. 2017). The results point to both differences and overlaps in the messages of cooperation between hunter gatherer and Western societies, which opens a discussion on how the adaptive value of storytelling has stabilised/shifted over the course of the development of agriculture and industry.

Individual differences in the rating of flower beauty

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Human aesthetic appreciation of flowers influences many forms of human behavior and is manifested in many cultures and across time. Surprisingly, until recently, very little was known about human preferences for different floral traits. This study follows on our previous research concerning the attractiveness of various floral traits for humans. We observed some general preferences, e.g., beautiful flowers were prototypical (radially symmetrical, simple), had sharp contours and blue color. However, we did not examine possible individual differences in the estimation of flower beauty. There is some evidence that preferences of colors or habitats are influenced by raters' age, sex, level of expertise, and other individual factors. These factors might also apply to flower preferences. To examine this issue, we created an online survey in which 1650 adult Czech respondents rated the perceived beauty of 52 flower stimuli of diverse shapes and colors, and answered questions concerning their demographics, knowledge of plants, attitude towards plants, and some psychological characteristics. We performed an exploratory factor analysis to reduce the number of questions into several meaningful variables. We created GLM's to compare the relative importance of these variables on the general preference of flowers and the preference of flower colors and shapes. We found that: Level of expertise had a positive effect on the beauty rating of almost all determined flower traits; sex did not correlate with the general rating of flower beauty, but women rated typical and round flowers as more beautiful; age had a positive effect on the general flower beauty rating; older people liked bilaterally symmetrical and ragged flowers more than younger people; and childhood experience with plants positively correlated with flower beauty. A subsequent study compared the preferences of children ($n = 231$, mean age = 8 years) and adults. Children had stronger preferences for vivid colors and typical flowers. They also preferred round flowers, while adults the ragged ones. Our results shed some light on how the individual differences shape human phytophilia and might be useful for anyone interested in people-plant interaction research.

Not all snakes are alike: A complex study of the affective response to different snake species

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The aim of this study was to examine the neurophysiological response to two homogenous sets of affective snake pictures: highly dangerous, poisonous snakes (mainly vipers and rattlesnakes) versus harmless yet disgust-evoking snakes (blind snakes). Pictures of leaves were used as control (neutral) stimuli. Using a block fMRI design, we measured responses of 120 Czech participants with differing susceptibility to fear and disgust (measured using the SNAQ and DS-R questionnaires). Additional measurements of physiological response (skin resistance) and eye movements were acquired together with rankings of the self-assessed fear and disgust evoked by the stimuli. The fMRI results showed a clear difference between the fear-eliciting and disgust-eliciting snakes. The activation of the visual cortex bilaterally was significantly higher (condition: fear > disgust, $p < 0.001$) when watching the fear-eliciting snakes. The occipital fusiform gyrus, lingual gyrus and inferior occipital gyrus were bilaterally activated only during the fear-eliciting condition. These results are in agreement with findings that more extensive activation of the visual system facilitates the perceptual processing of survival-relevant stimuli. Congruently, the results of the physiological measurements showed that there was a higher response to the fear-eliciting snakes, differing significantly from the disgust-eliciting snakes (Tukey test $p < 0.001$). In conclusion, human respondents are able to differentiate between various snake morphotypes. The fear-eliciting snakes present life-threatening stimuli and thus selectively attract motivated attention, while disgust-eliciting snakes, although also affective, do not possess an immediate threat and are thus perceived with less concern. This research was funded by the projects n. 17-15991S and Nr. LO1611.

Empirical verification of the hypothesis that conservatism and liberalism are evolutionary strategies to avoid the costs of outbreeding and inbreeding depression

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Humans differ on conservatism-liberalism continuum. This continuum is at least as long as human written history, for example scholars point out, that there was clearly a liberal and a conservative fraction in ancient roman senate. Individuals who are conservative tend to value ingroups and dislike outgroups, they emphasise the value of tradition, and obedience to authorities. They also would like to control sexual decisions of their children, especially they strongly oppose promiscuous sexual behaviors. Liberals manifest opposing traits.

Some scholars (especially Avi Tushman in his book *Our Political Nature: The Evolutionary Origins of What Divides Us*) hypothesize that conservatism and liberalism are two distinct evolutionary strategies to avoid the costs of, respectively, outbreeding and inbreeding depression. As is well known, breeding with closely related individuals usually reduces fitness. But also breeding with individuals who are very genetically different can reduce fitness, because such individuals can have incompatible traits. Large study on Icelandic population showed that the highest fitness had couples that were 3rd or 4th degree cousins. Also many studies show that romantic couples are more genetically related than could be explained by chance alone.

We tested this hypothesis on a relatively large polish sample (N=373; mainly students). Our subjects filled out series of questionnaires regarding they political worldview, psychological traits and they willingness to mate with members of the outgroups (people of different nationalities). Our hypothesis was partially supported with small and moderate effects. We believe that our study can shed much light on the ultimate explanation of conservatism-liberalism continuum.

Scary and nasty beasts: Fear of predators vs disease avoidance in animal phobias

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Animal phobias are one of the most prevalent mental disorders. We analysed how fear and disgust, two emotions involved in their onset and maintenance, are elicited by common phobic animals. In an online survey, the subjects rated 25 animal images according to elicited fear and disgust. Additionally, the completed four psychometrics, the Fear Survey Schedule II (FSS), Disgust Scale - Revised (DS-R), Snake and Spider Questionnaire (SNAQ, SPQ). Based on a redundancy analysis, fear and disgust image ratings could be described by two axes; one reflecting a general negative perception of animals associated with higher FSS and DS-R scores and the second one describing a specific aversion to snakes and spiders associated with higher SNAQ and SPQ scores. The animals can be separated into five distinct clusters: 1) non-slimy invertebrates; 2) snakes; 3) mice, rats, and bats; 4) human endo- and exoparasites (intestinal helminths and louse); and 5) farm/pet animals. However, only snakes, spiders, and parasites evoke intense fear and disgust in the nonclinical population. In conclusion, rating animal images according to fear and disgust can be an alternative and reliable method to standard scales. Moreover, tendencies to overgeneralize irrational fears onto other harmless species from the same category can be used for quick animal phobia detection.

Dominance and friendly behaviour during self-presentation of men in a mating context is linked to their testosterone levels

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Testosterone levels are supposed to adaptively predispose men to be efficient both in competition with other men and in the mating context. Increased frequency of dominant behaviour might be one way higher testosterone affects the likelihood of being chosen by a female partner. In our study, we systematically observed microscopic dominance and friendly behaviours of 44 men aged 16-18 years during their self-presentation videos that were supposed to be presented to a preferred female. Fifteen female raters aged 14-16 years rated attractiveness of the men. Testosterone was collected from saliva prior to the video-recording. Two additional saliva samples were collected after the video-recording and in connection to an encouraging outcome – the participant was told that he was one of two men chosen by a preferred female – and discouraging outcome – the participant was finally told that the same preferred female chose the other man. A composite index of dominance was positively loaded by the duration of open leg position, arms apart from body, chest leaning and by the frequency of self-touch on chest, neck or lower jaw and cheek, and negatively by duration of bent chest, arms by body, bent head and head in palms and the frequency of joint hands. Friendly behaviour was a combined measure of the duration of an open arms position, smile and laughter, direct gaze, nodding and open palms, and of the frequency of mimic expressions and gestures. We found basal testosterone levels to be positively related to dominant behaviour, and negatively to friendly behaviour. Reactive testosterone levels were unrelated to behaviour during self-presentation. Men showing either dominance or friendly behaviour (or both) were rated higher on attractiveness compared to men scoring low on both dominance and friendly behaviour. We discuss our results in terms of possible alternative strategies to attract a female based on dominance and friendliness.

Attitudes to immigration are predicted by intra-sexual competition and the attractiveness of the immigrant

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Antfolk, Johansson, Westerlund, Marcinkowska, and Santtila, (2018) have shown that attitudes toward immigration are related to intra-sexual competition, but failed to find a predicted relationship between physical attractiveness, sexual competition, and attitudes to immigration, perhaps due to inadequate manipulations of attractiveness. Extending this work, we manipulated the attractiveness of facial images, in a counterbalanced experiment for high and low attractiveness, and presented these images along with vignettes describing the putative hopes of the individual in the image to gain residency in the UK. Participants reported whether they felt the person should be allowed into the UK and how willing they would be to assist the person in settling and assimilating. As predicted by considerations of intra-sexual competition, results show that participants hold more negative attitudes towards helping attractive immigrants of the same sex while favouring helping attractive immigrants of the opposite sex compared with their less attractive counterparts; this was equally true for both male and female participants. These results are important to consider with regard to the interpretation of the rhetoric of immigration.

Testosterone and cortisol dynamics model for sexual partner competition: Presentation and corroborating statistical outcomes

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Competition for copulation success elicits rapid hormonal responses. Most-studied are the steroid hormones testosterone (T) and cortisol (C). In this observational study, 88 young adult men (aged 16–18 years) competed in a virtual scenario for females with two pre-planned consecutive outcomes: initially, they were chosen by a desired female over peers and later rejected in favor of a rival. We chose to study this scenario not only due to its ultimate evolutionary implications (contrasted with usually studied sport competitions). Hormone samples were collected prior to the competition, then after being chosen, and after being rejected. To analyze the data, we used Maximum Likelihood methodology because it avoids pitfalls of significance testing of means, ANOVA-type analyses (not only due to lack of symmetric distributions), etc. We also did not need to remove “outliers” because we calculated ML probability density functions of the distributions, obviating the above tests. We made comparisons using Wilks lambda and eliminated models using AIC (Akaike’s Information Criterion). We find that changes in both T- and C-levels depended on whether the males already had at least one regular sexual partner or none. We also used outcomes of a Rank-Style-of-Peers questionnaire to model competition-related character traits for hormone shifts. Our findings show that the levels of these two steroid hormones and their shifts depended on partnership status and character traits of the competing males, albeit in a statistically different way for partnered and single men. These outcomes are implemented in a pathway model TCDM (Testosterone and Cortisol Dynamics Model). The model has been applied to the situation prior → win, and win → reject evidencing its universality.

Structural microfoundations of the society the evolutionary behavioural science founding of the social sciences

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Darwin, born in Shrewsbury, England, 1809, published *The Origin of Species* in 1859.

Marx, born in Trier, Germany, 1818, published *Das Kapital* in 1867.

Westermarck, born in 1862 in Helsinki, Finland, published *The History of Human Marriage* in 1891.

Durkheim, born in 1858 in Épinal, France, published *The Division of Labour in Society* in 1893.

Weber born in 1864 in Erfurt, Germany, published *The Protestant Ethic* in 1905.

In the middle of the 19th century, the young Darwin and his contemporary, Marx thought deeply about the origins of the society. Their conclusions led to radically different approaches. Their successors, who were in Charles' and Karl's grandchildren's generation, took up the divergent explanations and ran with them. While Westermarck crafted evolutionary sociology, his two contemporaries, Durkheim and Weber, took society's ability for self determination all the way through to modern social sciences. In these two traditions the biological foundations to the social behaviour of our, arguably exceptionally successful, great ape species stands against the kaleidoscope of socially constructed power structures and strongly emergent institutions. In these two traditions behavioural ecology stands against sociology. Evolutionary anthropology against social and cultural anthropology. Classical demography against evolutionary demography. Theology and psychology against evolutionary psychology. Economics of individual behaviour against everything we know in biology.

This poster presents a theoretical framework that bridges the divergent paths of these scholarly traditions. The Structural Microfoundations Theory employs an individual-level engine of evolved social behaviour, in particular the primate propensity to actively manage the architecture of the ego social network and its behavioural consequence, to connect macro societal phenomena, primarily demographic processes, to phenomena on the meso-level, such as network delineation and fragmentation, and the macro-level, such as crime and law, social identity, kinship and homophily, emergent ideologies, political radicalisation, religious institutions, and inequality regulation.

Fundamental frequency and dominant cepstral peak of men's voices predicts testosterone levels: An exploratory study

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In humans lower voice pitch is a distinctive feature in males which develops under the influence of androgens. Previous research has found that inter-individual differences in mean fundamental frequency (F0) – acoustic correlate of voice pitch – are associated with differences in testosterone levels in men. It was also suggested that vocal fold mass affects not only vibratory frequency but also stability, which may result in a lower rate of signal aperiodicities and thus improved voice quality. It has been shown that the most reliable acoustic predictor of perceptual voice quality is the dominant peak of voice cepstrum (CPPs). Here we tested for possible associations between F0 and CPPs (with age and body weight controlled) and testosterone levels in a sample of Czech men who participated in a broader study testing a link between immune reactivity and attractiveness. As a proxy for immune system reactivity, we used vaccination against hepatitis A (Twinrix) and meningococcus (Menveo). In total, 21 men (mean age = 26.2) participated in the study. Voice samples were recorded 1 day prior to vaccination and then 2 weeks after. Recordings consisted of standardized text (sentences, instructions, and isolated vowels) approximately 45 seconds long. Recordings took place in a standardized room with controlled background noise and from distance of 20 cm from the microphone. F0 and CPPs measurements were performed in Praat with standardized settings. Testosterone samples were taken after each recording session and after vaccination at standardized morning hours. A linear regression model with F0, CPPs, age and weight as predictors and testosterone level as the dependent variable was employed. In our sample, F0 of the pre-vaccination recording predicted only pre-vaccination testosterone levels. However, CPPs of both pre- and post-vaccination recordings were positively associated with post-vaccination testosterone levels. In all models body weight predicted testosterone levels. Our study suggests that voice quality of male voices apart from fundamental frequency may reflect testosterone levels.

No evidence for adaptation effects of voice-pitch on attractiveness judgements

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Prior work has demonstrated that exposure or adaptation to voices can induce aftereffects and suggests that we use opponent coding to process voices. After exposure to high and/or low-pitched voices, those voices begin to sound more normal. Studies on facial attractiveness show that these aftereffects also alter how attractive people look. After exposure to unattractive faces, unattractive faces become more normal, and more attractive, whereas attractive faces become less normal and less attractive. As voices are processed in a similar fashion to faces, we tested if adaptation to high- or low-pitch (the primary correlate of voice attractiveness) influences attractiveness of voices. Using identical stimuli and paradigm as prior work showing adaptation effects of voice pitch on normality judgments, we tested for adaptation effects of high and low-pitched voices for both male and female vocalizers. We replicated findings that there are sex differences in preferences for voice pitch, but we found no adaptation effects. This demonstrates that adaptation is not automatic, obligatory or the default in voice perception based on attractiveness preference. Our results highlight the need for rigorous replication studies in psychology.

Olfactory cuteness – baby body odours recruit pleasure network in the maternal brain

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The smell of the own baby is crucial for kin recognition and bonding but evidence on neural substrates has been scarce. The present study examined maternal brain responses to body odours of the own and an age- and sex-matched unfamiliar baby. We aimed to explore whether those, similar to visual cuteness (“kindchenschema”), function as incentive cues facilitating maternal attachment by recruiting the pleasure network.

fMRI data was acquired on a Siemens 3T Prisma scanner (T2*-weighted gradient-echo, echo-planar imaging sequence). The odour of the own and an unfamiliar sex- and age-matched child (M = 22.2 months; SD = 9) was birhinally presented to 30 normosmic mothers (M = 32.2 years; SD = 3.1) each two times in randomized order (per run: 15x á 5 seconds odor stimulation, 19 seconds clean air) via an air-dilution olfactometer. After each run, the mothers rated pleasantness of the odour.

Baby body odours activated olfactory, reward, and social processing areas, as well as the maternal pleasure system. Neural responses did not differ between the own and an unfamiliar baby. We surmise that baby body odours therefore serve as a robust cue of cuteness facilitating maternal attachment in healthy mothers, which has similarly been observed for visual cues (“Kindchenschema”). Subjective pleasantness evaluation of the own child’s odour was associated with enhanced recruitment of the pleasure network suggesting a biological mechanism in order to support targeted investment of maternal resources.

Does handshaking provide a means of olfactory communication in humans?

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In many species, meetings between individuals are characterised by brief or even extensive olfactory investigation. Inter-individual assessments made in this way enable individual discrimination or recognition and perhaps shape appropriate responses in subsequent interaction, such as in decisions about escalating aggression or whether to accept a mate. A recent study claimed that in humans, handshake greetings might have a similar role: it suggested that people often smell their hands after a handshake. I will present results of a study aiming to further test this idea. Experimental participants attended a session in which they greeted each of four confederates in a staged interaction lasting 90 seconds. Approximately 180 participants were tasked with remembering information about the confederates. Interactions were scripted for confederates, in order to standardise the task, but at the beginning of the greeting one confederate of each sex shook hands with the participant, the other two confederates did not. This enabled us to compare behaviour of male and female participants to both male and female confederates in a balanced design, and by covertly filming each interaction, we were able to score the extent to which participants assessed the smell of their hands immediately following the greeting. Furthermore, following the interactions, participants underwent a memory task in which they recalled details about the confederates. The results of this study will be presented and the implications of the results discussed, as well as comments on the ethical and procedural difficulties presented by such studies.

Sibling relations in patchwork families – reciprocity, inclusive fitness, and competition for resources

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Having both full and half siblings was a recurring feature of the ancient social environment. Hence, solving conflicts and allocating resources among individuals with different levels of relatedness was a major adaptive problem even in the sibling context. The investigation of family relations in an evolutionary perspective is becoming more important as it might contribute to our knowledge about the functioning of so called „patchwork” families. These „non-typical” families might in fact be the evolutionary norm.

Our aim was to explore whether people differentiate between half- and full siblings on an emotional level as implied by the theory of inclusive fitness, and to test whether co-residence or genetic relatedness improves sibling relations to a larger extent. We administered the Sibling Relationship Questionnaire (SRQ) to 196 individuals who reported how much time they spent together with their full- and half siblings in their childhood. We built Generalized Linear Mixed Models to test for the effects of relatedness, co-residence, and the interactions between these, on sibling relations.

Generally, among siblings who lived together, relatedness was not a significant predictor of the quality of sibling relations. However, when siblings encountered less frequently, full siblings had better relations than maternal half siblings, and those better than paternal half sibling. In sum, genetic relatedness was important only among those who did not live together. The results suggest that even in recent industrial societies inclusive fitness mediates siblings’ relations, but as the possibility of reciprocation among co-resident siblings is high, its importance is reduced. When separated, siblings feelings of closeness towards each other and the amount of conflicts correspond to a pattern predicted by the theory of inclusive fitness. That is, they act as if they relied on the estimated extent of genetic relatedness (full siblings having better relations than half siblings), taking the certainty of relatedness also into account (maternal half siblings having better relations than paternal half siblings).

Women's birth parameters and level of morphological femininity in reproductive age

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Epidemiological studies show that indicators of adverse conditions during intrauterine growth and development in utero, such as low birthweight or relative thinness at birth influence adult physiology, ovarian functioning, contribute to variation in levels of steroid hormones and fertility in adult women, and are also related to the risk of major chronic diseases, including cardiovascular diseases, diabetes and estradiol-dependent cancers. Women's morphological femininity is the key factor influencing their physical attractiveness and is perceived as a cue of estradiol levels and general health. Here, we tested if birth parameters are related with perceived and measured morphological level of femininity among women of reproductive age. Women at age between 25 and 34 years (Mean=28.45, SD=2.40), with no fertility problems, no gynaecological and/or chronic disorders, not taking any hormonal medication or using hormonal contraception took part in the study. Information on birth parameters (birth weight, length, and pregnancy week at birth) were taken from medical documents and were available for 138 participants. Relative thinness at birth was evaluated based on ponderal index. BMI, breast size, WHR were measured. Women reported their age at menarche. Fasting blood samples were drawn, and serum concentrations of sex steroid hormones were determined. Face photos were taken at early follicular phase (between 2nd and 4th day of menstrual cycle) and face femininity were assessed in online questionnaires. Each photo was rated at least by 100 men. Birth parameters did not predict perceived face and body femininity or measurements of morphological cues of femininity, also when controlling for week at birth, BMI, age at menarche and sex steroid hormones levels ($p>0.05$). This study shows that birth parameters are not related with morphological femininity in women of reproductive age, suggesting no relationship between conditions during intrauterine growth and the key trait influencing physical attractiveness in adult women.

Early environment, physical activity and potential fertility

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A decline in availability of metabolic energy, due to a low calorie diet or intense physical activity, causes reduction in levels of ovarian hormones in women. Such suppression of ovarian function, even though it lowers the chance of pregnancy, is considered adaptive, because it prevents unnecessary investment in the offspring of potentially low quality.

ental conditions (i.e., during the individual's fetal and childhood development) permanently influence physiology, including ovarian function. Women experiencing poorer developmental conditions have (as adults) lower levels of ovarian hormones and, thus, a lower potential fertility, than women developing in better environments. These findings raise the question if lower levels of hormones due to poor developmental conditions should be considered a pathology, a reflection of physiological constraint, or an evolved adaptation.

Results of our research on the interactive effects on ovarian function of conditions during development and conditions during adult life suggest that quality of early development changes the sensitivity of response of ovarian physiology to energetic factors. I will consider the possibility that this response is adaptive, rather than a pathology or a physiological constraint.

The association between 2D:4D ratio and aggression in children and adolescents: Cross-cultural and gender differences

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Two recent meta-analyses have suggested the association between digit ratio (2D:4D) and aggression is weak. This conclusion has been criticised because the meta-analyses conflate forms of aggression that show strong sex differences with those that do not, and most studies have considered post-pubertal participants.

We test the influence of 2D:4D and ethnic variables in the expression of aggression in children and adolescents in four cultures of European and African origin. 1296 children and adolescents from Tanzania and Russia from 4 ethnic groups – Datoga, Meru, Russians, Tatars. We used Buss and Perry aggression questionnaire and direct measurement of the 2nd and 4th digits.

There were cultural and gender differences in ratings on aggression with boys reporting more physical aggression. In all four samples right 2D:4D was significantly lower in boys, compared to girls. With regard to our total sample of boys, the right 2D:4D was significantly and negatively associated with self-ratings on physical aggression and the left hand was positively associated with this subscale. No associations between 2D:4D and physical aggression were found for girls. Hostility was negatively correlated with right 2D:4D in both sexes.

Sex differences were strongest for right 2D:4D (boys<girls), for physical aggression (boys>girls). Right 2D:4D was negatively related to physical aggression in boys only. The association between right 2D:4D and aggression in children and adolescents was negative and was most strongly seen in those forms of 2D:4D and aggression that are sexually dimorphic.

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A field guide to identifying *Homo sapiens*. Defining human species in face of recent genetic and paleoanthropological data

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At present, identifying a human among other animal species is not a particular challenge. The phenotypical differences that distinguish us from our closest living relatives, *Pan troglodytes* and *P. paniscus*, are vast and easy to pick up even by a layman's eye. However, adding a time perspective tremendously complicates this strict division between us and the other species. With ever growing list of hominini subtribe member groups recognized from the fossil record as well as the results of paleogenetic analyses that show complex patterns of ancient dispersals and admixtures, it becomes more apparent that our evolutionary history rather resembles a thicket than a neat simple tree. Defining what or who is or isn't a member of the human species in this context becomes a nontrivial task.

Yet, we have always been keen on classifying and labelling the elements of the world around us, which has been an indispensable aid in perceiving, processing and understanding our environment. A precise definition of *Homo sapiens* might thus not be merely a matter of semantics but can in turn strongly impact the perception of our identity and place as a species and thus deserves a systematic insight.

In my presentation I will review the scientific knowledge about the evolution of humans. I will trace their developments and dispersals, from australopiths arising in Africa, through to the anatomically modern human spread throughout practically all livable corners of the Earth. I will introduce the most evolutionarily significant ancient human groups and their role in this journey. Finally, I will discuss different approaches and difficulties to defining the human species.

Preferences of allometric and non-allometric variation in sexual shape dimorphism based on faces from four distant cultures and its relationship to perception of masculinity and femininity

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Preferences of sexually dimorphic facial features vary across cultures. This study presents a comparison of 4 cultures: Cameroonian (CMR), Czech (CZ), Turkish (TR), and Colombian (COL). We used a dataset of 720 (360 women) faces to investigate whether perceived facial femininity/masculinity (FM): (1) is preferred across cultures; (2) reflects both allometric and non-allometric variation in sexual shape dimorphism (SShD); and (3) whether the dimorphic traits due to size (allometric vs. non-allometric SShD) are preferred or not.

Femininity of female faces was consistently preferred across all four cultures. Masculinity of male faces was preferred in CZ and COL while more feminine men were preferred in CMR. No relationship between MF and attractiveness was found for male TR faces.

In all cultures, MF shows only weak or null association with measured SShD (allometric and non-allometric) for both male and female faces. The statistically significant association between MF and SShD was found for CMR (allometric) and COL female faces (allometric and non-allometric); CZ (allometric), TR, and COL male faces (allometric and non-allometric).

Considering allometric SShD, the more sex typical female faces were preferred across all cultures. Male faces with sex-typical morphology were preferred only by CZ women. No association between allometric SShD and attractiveness was found for COL and TR male faces. CMR men with less masculine facial morphologies were strongly preferred. Regarding non-allometric SShD, sex-typical female faces were preferred in CZ and COL while no association between allometric SShD and attractiveness was reported in TR and CMR.

In sum, the preferences of MF/SShD tend to converge in CZ, TR, and COL where more sex-typical men and women tend to be preferred or the preference of male sex-typicality remains neutral. CMR female faces show usual preference of sex-typical SShD and MF. In contrast, CMR male faces give quite a different picture. Less masculine CMR men with less sex-typical allometric but more sex-typical non-allometric traits (i.e. the male-related cues independent on size) are preferred. The preference of facial cues independent of body size, while avoiding the cues due to allometry, may shed a light on the evolution of some facial traits typical for sub-Saharan African populations. Evolutionary and social consequences of this African uniqueness will be discussed.

Scleral pigmentation leads to conspicuous, not cryptic, eye morphology in chimpanzees

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Eye gaze following has been argued to be uniquely facilitated in humans by our conspicuous white sclera (the pale area around the coloured iris). In contrast, non-human great ape sclerae are typically darker, which has been suggested to render gaze direction 'cryptic', inhibiting gaze following by conspecifics. We compare a large sample of chimpanzee, bonobo, and human eye photographs using quantitative methods. We show that, like humans, bonobo eyes present lighter sclera relative to their irises. We also show that, despite darkened sclerae in chimpanzees, the relative difference in colouration between the sclera and iris is similar across all three species. We argue that chimpanzee, bonobo, and human eye conspicuity is similar, and could facilitate gaze following by a conspecific. While depigmentation of the sclera relative to the iris offered one evolutionary route towards conspicuous eye-gaze in humans and bonobos, the opposite route was taken by chimpanzees.

Dark Triad traits are not visible in faces

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Objectives: In this study we intended to replicate the results of Holtzman (2011) to see if participants can correctly select faces high on Dark Triad traits.

Methods: Standardised images of 42 male university students have been taken (mean age = 21.28, SD = 2.2), and they were asked to complete the Short Dark Triad scale (Jones & Paulhus, 2014). Using Webmorph (DeBruine, 2018) we created averages of each Dark Triad trait using 10 of the highest and lowest scoring individuals, respectively. We then presented each of the 3 high-score morphs paired with their low-score counterparts, in two trials, to 162 raters (109 female, 53 male; mean age = 25.5, SD = 8.68). This way, participants saw 18 face pairs in total. They were asked to match the description they could see on screen to one of the two images, using a slider to indicate which face the description matched better. Descriptions were taken from Holtzman (2011), depicting the Dark Triad traits in everyday terms.

Results: We used binomial tests to see whether the descriptions were more likely to be matched to high Dark Triad faces. The high Mach prototype was chosen correctly more often than would be predicted by chance. The high psychopathy morph was chosen correctly less often than would be predicted by chance. There was no indication of participants discriminating high and low narcissism morphs. On the other hand, participants were more likely to pair low psychopathy composites, with descriptions of narcissism. Moreover, high narcissism was more likely to be paired with descriptions of psychopathy and Machiavellianism.

Conclusions: Contrary to previous studies (Holtzman, 2011; Shiramizu et al., 2018) in our sample participants did not distinguish between high and low narcissism morphs. In contrast to what we expected, participants paired low psychopathy faces with descriptions of psychopathy and narcissism. This raises the question whether people are indeed capable of distinguishing high Dark Triad faces.

Facial appearance and general health biomarkers in women

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Facial attractiveness has been suggested to provide an honest signal of an individual's biological condition, particularly health and fertility, influencing human mate choice. However, there is surprisingly little direct evidence that face attractiveness reflects actual health in women. In this study we tested if facial appearance is related with levels of biomarkers of general health, commonly used in clinical practice for evaluation of body functioning. Face photographs of 162 healthy women of reproductive age (Mean=28.62, SD=2.37), recruited between the 2nd and 4th day of the menstrual cycle, were assessed by men in an on-line survey in terms of attractiveness and perceived health. Women's general health was evaluated based on levels of markers of lipid and glucose metabolism balance, biomarkers of liver functioning, and inflammatory markers. BMI, testosterone (T) and estradiol (E2) levels were controlled. Face attractiveness, but not health, was negatively related with lipid profile components harmful for health (total cholesterol, LDL, triglycerides) but not with relatively protective for health HDL. When controlled for BMI, E2 and T, only the relationship between attractiveness and triglycerides remained significant. Facial appearance was unrelated with glucose metabolism, liver functioning, and low-grade inflammation markers. Additionally, we confirmed the negative relationship between facial appearance and BMI and T and positive with E2. The results suggest, that for healthy women of reproductive age, such measures as BMI and sex hormone levels may be better predictors of attractiveness, as they are strongly linked to current health and fecundity, compared to such measures of health as markers of lipid and glucose homeostasis, liver functioning or low-grade inflammation. Within clinical norm, these measures of health may rather predict future health problems, less important in mating context and only modestly reflected in facial appearance. This work was supported by National Science Centre, Poland; Grant number: 2015/19/B/NZ8/02061.

Everyday immorality. Testing the Moral Foundations Theory in the context of interpersonal interactions

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Moral Foundations Theory (MFT) states that human morality was shaped by natural selection in response to adaptive social challenges. Its' proponents argue that moral reasoning is driven by affect and being regarded as immoral hinders interpersonal bonding and cooperation. Yet, a great number of studies on MFT was based on people' reactions to hypothetical moral transgressions which were frequently detached from everyday experience. Critics question the validity of MFT in a more casual context, where most social interactions take place. The aim of this study was to verify the validity of MFT in the context of regular interpersonal relationships.

Two laboratory experiments were carried out. In the first one (N = 82) the participants were introduced to a series of stories by strangers about their success (achieved through moral or immoral means). In the second study (N = 184, 92 couples), the pairs of participants who formed romantic relationships reacted to their mutual successes in a simple game that made it possible to achieve success in a moral or immoral way. Participants described their affective reactions to others' successes on the dimensions of valence, arousal, and motivation to approach. In the next step, they formulated short verbal responses as a reaction to success.

The results showed that the information about successes achieved in an immoral way, in comparison to those achieved in a moral way inhibited the occurrence of positive emotions, were more arousing and increased the motivation to avoid the interaction partner. Furthermore, information about immoral success led to a decrease in enthusiastic verbal responses to information about success. The above effects occurred both in the relationship with a stranger and in the relationship with a romantic partner.

The conducted research was a successful attempt to validate MFT in the context of regular interpersonal relationships. We demonstrated that witnessing immoral behaviors, as described by MFT, lead to affective and verbal reactions that may diminish a relationship quality.

How virtue signalling makes us better: Moral preferences with respect to autonomous vehicle type choices

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Autonomous vehicles (AV) are expected to significantly benefit our transportation systems, their safety and impact on environment. However, many social and moral questions and challenges concerning AVs still remain. One of the pressing moral issues has to do with the choice between AV types that differ in their built-in algorithms for dealing with situations of unavoidable lethal collision. In this paper we present the results of our study of moral preferences with respect to three types of AVs: (1) selfish AVs that protect the lives of passenger(s) over any number of bystanders; (2) altruistic AVs that minimize the number of casualties, even if this leads to death of passenger(s); and (3) conservative AVs that abstain from interfering in such situations even if it leads to the death of a higher number of subjects or death of passenger(s). We furthermore differentiate between scenarios in which participants are to make their decisions privately or publicly, and for themselves or for their offspring. We disregard gender, age, health, biological species and other characteristics of (potential) casualties that can affect the preferences and decisions of respondents in our scenarios. Our study is based on a sample of 2769 mostly Czech volunteers (1799 women, 970 men; age IQR: 25-32). The data come from our web-based questionnaire which was accessible from May 2017 to December 2017. We aim to answer the following two research questions: (1) Whether the public visibility of an AV type choice makes this choice more altruistic and (2) which type of situation is more problematic with regard to the altruistic choice: opting for society as a whole, for oneself, or for one's offspring.

Our results show that respondents exhibit a clear preference for an altruistic utilitarian strategy for AVs. This preference is reinforced if the AV signals its strategy to others. The altruistic preference is strongest when people choose software for everybody else, weaker in personal choice, and weakest when choosing for one's own child. Based on the results we conclude that, in contrast to a private choice, a public choice is considerably more likely to pressure consumers in their personal choice to accept a non-selfish solution, making it a reasonable and relatively cheap way to shift car owners and users towards higher altruism. Also, a hypothetical voting in Parliament about a single available program is less selfish when the voting does not take place in secret.

Don't Tell, Show! Using techniques of narrative fiction to discover individual differences in mental state attribution

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The idea of expanding theory of mind through literature, such as fictitious stories, is a growing area of interest in human cognition. Prior research has often focused on either single pieces of literary texts, or simple stories that are not structured or difficult enough to study individual differences among neuro-typical adults. In order to increase difficulty within such paradigms, researchers have applied more difficult tasks and questions. Thus, instead of applying more challenging stimulus materials, prior methods targeted the tasks and increased task difficulty through syntax complexity. However, this approach places greater demands on non-social aspects of cognition, such as executive function, working memory, and verbal ability.

Here, we adopt an approach of narrative, which allows us to create more challenging and realistic stimuli for the assessment of theory of mind. In a series of three studies, our results revealed individual differences in interpreting mental states of story characters. By applying creative writing techniques, and specifically, the technique known as: “Show, Don't Tell” we created a series of stories that avoided the use of mental state words. In this way, we could stay away from directly telling the mental states of story characters. Instead, we created scenes from which readers can draw their own conclusions. Results demonstrated that this method is sensitive to variation in theory of mind ability, even when applied in different languages and cultures (Hungary and USA). Our findings have major importance in examining theory of mind in conflict (e.g. manipulation, deception, or misunderstanding). In particular, the approach of showing behavioral cues – and not telling the mental states of characters – can solve the long-existing problem of having allowed the stimulus material to directly reveal what the mindreading tasks are aimed at detecting, i.e., the nature of conflicts.

Short-term mating orientation predicts men's attentional bias when making attractiveness judgments: Evidence for a common core underlying unrestricted sociosexuality, self-perceived mate value and narcissistic admiration

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Men with an unrestricted sociosexual orientation (i.e. a preference for short-term mating) place a relatively greater premium on women's bodily than facial attractiveness. This is suggested to reflect that women's bodies, particularly body mass index and waist-to-hip ratio, cue reproductive potential to a greater extent than their faces, which should be prioritised relatively more when a short-term mate is sought. Sociosexuality is associated with both self-perceived mate value and with the agentic, but not antagonistic, dimensions of grandiose narcissism. It can be expected, therefore, that men high in these personality measures should show a relative preference for bodily attractiveness in potential partners.

In the present study we used eye tracking to measure men's attentional bias towards women's faces versus bodies. We predicted that men high in unrestricted sociosexuality, self-perceived mate value and agentic narcissism (reflected in the Admiration facet of the Narcissistic Admiration and Rivalry Questionnaire) would show a relatively greater attentional bias towards women's bodies than their faces.

Heterosexual male participants (N=48, age range 18-30 years) rated overall attractiveness of full-figure photographs of 44 age-matched women. Two attentional bias measures were extracted: the latency to the first fixation on the face versus the body, and proportion of total fixation time spent attending to the face versus the body. The participants also completed the revised Sociosexual Orientation Inventory, the Self-Perceived Mating Success Scale, and the Narcissistic Admiration and Rivalry Questionnaire.

Participants generally fixated on the face before the body. In terms of total fixation time, however, results were in the predicted direction: whereas men attended more to women's faces overall, sociosexually unrestricted men spent relatively longer attending to women's bodies, as did men with a high self-perceived mate value; this pattern was also found for men high in narcissistic admiration but not narcissistic rivalry. Furthermore, principal components analysis identified a common core underlying sociosexual orientation, self-perceived mate value and narcissistic admiration, indicating a short-term mating orientation; this common core significantly predicted a relatively greater attentional bias towards women's bodies. We conclude that our findings support the notion that women's faces and bodies cue different aspects of reproductive potential.

Cues of facial attractiveness and sex typicality compared across five cultures

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Cross-culturally, people tend to agree on facial attractiveness assessments. Several characteristics affect attractiveness ratings: sexual typicality (a cue for fertility) averageness (a potential indicator of heterozygosity) and skin coloration (a cue to healthiness). However, environmentally-driven variability in the perception of attractiveness and sex typicality (masculinity, femininity), has been described among cultures. People from rural environments with higher pathogen prevalence and/or resource scarcity should prefer less feminine women and more masculine men. An alternative hypothesis states that exaggerated sex-typicality should be preferred rather in developed urban cultures.

Based on facial photos of both sexes from five distinct cultures, both developed and underdeveloped (rural Cameroon, disproportionally developed Colombia, developed Czech Republic, and regionally developed Eastern, long-lasting urbanized cultures of Iran and Turkey), we investigated the relative contribution of sexual shape dimorphism (SShD), averageness (a distance from average facial configuration of a given sex), and lightness on perceived attractiveness and masculinity/femininity by male and female raters from the same culture.

Path analysis on female faces (rated by men) revealed that women perceived as more feminine were also rated as more attractive in all five cultures. In Colombia and Iran, structurally more sex typical women (SShD) were rated as more feminine and attractive. In the Czech Republic and Turkey, women with higher facial averageness were perceived as more feminine and attractive. Cameroonian women with lighter complexion were perceived as more attractive and feminine.

When male faces were rated by women, darker facial skin was associated with higher masculinity ratings in Iran and Cameroon. In Cameroon, Colombia, and Turkey, men with structurally more sex-typical faces (SShD) were perceived as more masculine. Masculinity and attractiveness ratings were positively correlated only in Czech and Colombian male photos.

Feminine women's faces seem to be preferred by men irrespective of societal development. However, facial masculinity of men seems to be preferred neither in harsher environment (Cameroon), nor in Eastern urbanized cultures (Iran, Turkey). Our results thus do not unequivocally support the previously published evidence that women's preferences for exaggerated male-specific traits are specific for developed urban cultures.

Cluster definition of art as a meeting point of analytical aesthetics and evolutionary approaches to art

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From a biological standpoint, art behaviors are illogical: they involve the expenditure of considerable time and energy yet have no apparent survival or reproductive benefit. Over the last 20 years, several researchers have challenged this assumption, positing a variety of evolved functions for art behaviors. Some of these hypotheses attempt to explain art behavior in general; some attempt to explain a subset of art behavior (Disanayake 1992, Miller 2000, Tooby & Cosmides 2001, Coe 2003, Scalise Sugiyama 1996, 2001, 2005).

Philosopher of art Denis Dutton (2006, 2009) proposes to employ an analytical “cluster” definition of art to describe art as universal, evolved, and natural kind, by providing a set of „recognition criteria”, twelve in Dutton’s version. “Cluster” means that the definition is disjunctive (in contrast to a “bound” definition, which is conjunctive), and hence accepting an object as art does not require it to conform to all of the criteria but only to some of them (disjunctive connector “or”). At the same time, the degree of “artistry” of object or behavior is not determined by the number of criteria that are satisfied. This is determined, rather, by the quality of what satisfies criteria.

I claim that the aesthetic universalist perspective of cluster definition supported by evolutionary findings, with considerable success, causes the reformulation of the concept of art. On one hand, it brings it back to life after the postmodern devaluation, showing how to create the theory of art without reducing its subject to culture, style, theory or interpretation, by exploring certain universal motifs and heuristics that are the reverse of its natural source - the human mind. On the other hand, by referring to the category of skill, proficiency and virtuosity and the category of pleasure, it evokes a long unseen confusion: art is no longer merely objects or actions, but also forms of human behaviour (having an adaptive value). The ethological approach also means that the concepts of artification, making special or signalling prove to be a challenge for the conceptual crisis in the theory of art, observed by Tatarkiewicz as early as in the 1950s.

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3	[s] Agnieszka Matras	The impact of childhood stress on the age at menarche
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54		Magdalena Klimek	Dermatoglyphics, an indicator of early-life environment, predicts fertility in women

1

Male infant handling in Barbary macaques (*Macaca sylvanus*): Paternal care or mating effort?

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Kin selection theory predicts that the intensity of male care should reflect the extent of paternity certainty. Still, males of several polygynandrous primate species care of particular infants. Two non-exclusive hypotheses have been suggested to explain their motivation. The paternal investment hypothesis sees male care as a male strategy to maximise the survival of genetic offspring and predicts an association between the distribution of mating and subsequent care (mate-then care-pattern). The mating effort hypothesis predicts that females distribute matings based on the amount of male care previously provided to their infants (care-then-mate). We tested these predictions in a group of wild Barbary macaques using 903 hours of focal data on 12 infants.

Support for both patterns depended on the perspective taken. Infants were not mainly cared for by their likely fathers, but males more often engaged with infants of their main previous mating partners. Females did not preferentially mate with the main caretakers of their infants, but males mated more frequently with the mothers of infants they had previously cared for the most. We suggest that the mate-than-care pattern taken from the male perspective may lend support to the paternal investment hypothesis. Males may try to optimise paternal investment by directing infant care based on their own

matings instead of monitoring all females' matings. Evidence for the care-then-mate pattern from the male but not the female perspective does not support the original mating effort hypothesis, but indicates that males may increase their individual mating success and paternal investment by maintaining enduring relationships with females.

These results may help us to better understand male care in the context of male and female reproductive effort and tap into the question of the importance of individual (own) and social (the other's perspective) information for reproductive strategies.

2

Is disgust sensitivity a result of immunomodulation in luteal phase? Within-subject study

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The compensatory behavioral prophylaxis hypothesis (CPH) proposes that evolved psychological mechanisms enhance avoidance of potential contaminants during periods of reproductive immunomodulation (e.g. caused by progesterone in luteal phase of menstrual cycle) so as to decrease the likelihood of infection. However, results of the previous studies are inconclusive. Therefore, our aim was to investigate differences in disgust sensitivity during phases of menstrual cycle, in healthy, regularly menstruating, young women.

The data from 60 participants, aged 20 to 35, will be analyzed. The level of disgust sensitivity was measured in two different menstrual cycles twice: (1) sixth day of the menstrual cycle and (2) at sixth day after the ovulation. Disgust in women was assessed by Two of Three Domain Disgust Scale, Padua Inventory – Washington State University Revision, Food Disgust Scale, Food Disgust Picture Scale and set of photographs depicting sources of infection. To make sure that women were correctly assigned to phases of menstrual cycle, luteinizing test, that is highly accurate in detecting ovulation, was used.

We expect that in luteal phase women will be more disgusted than in follicular phase. Due to the planned methodology, the study should drive a strong scientific proof for or against CPH.

3**The impact of childhood stress on the age at menarche**

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Various life factors might affect sexual maturity. In this research we analysed relationships between childhood stressful events and the age at menarche.

The research was conducted among 67 women living in Krakow, aged from 20 to 35. In order to measure the stress level before the age of 18, the Adverse Childhood Experience (ACE) questionnaire was used.

The ACE questionnaire assessed physical and mental abuse, sexual harassment, neglect, mental disorders, and drug and alcohol abuse in family. Based on results of ACE questionnaire we divided woman in two groups – women who have had at least one potentially traumatic experience (N=37) and women who have experienced none (N=30). There was significant difference in age at menarche between women who had and had not potentially traumatic experience ($t=2.40$, $p=0.019$). The mean age at menarche was 12.6 for women who experienced traumatic events in childhood, and 13.5 for women who had not.

The results of our study show a significant relationship between experiencing stress in childhood and the earlier age at menarche. This supports a hypothesis that adverse environmental conditions influence a reproductive strategy of an individual.

4

Areolar morphology: Distribution and number of areolar glands

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Human female breasts vary in number of areolar glands and their secretion may play a role in navigating newborn to the nipple. Previous research has found that number and distribution of areolar glands might be related to the onset of lactation. In our study, we investigated the number and distribution of areolar glands of mothers using Czech sample. Based on previous studies, we hypothesized that glands will be the most abundant on the upper lateral quadrant of the areola due to the position of newborn nose during breastfeeding.

We have taken standardized photographs of 88 mothers' areolae at Saint Apollinaire maternity ward in Prague 1 day postpartum. Photographs were analysed by dividing areola into four sectors and number of areolar glands counted. Mothers also completed Areolar Diary questionnaires in three consecutive days, which they spent at the maternity ward. Areolar Diary is a self-reported record of areolar glands.

The photographs analysis showed that number of areolar glands vary among the women. The areolar glands on both breasts range from 0 to 108, with the average of 34,7. We found significant differences in distribution of areolar glands between the upper lateral sector and lower medial sector. The self-reported Areolar Diary have shown no difference between the sectors and no change in their amount and distribution during the three days postpartum.

In line with previous studies, we found a specific distribution of areolar glands which supports the hypothesis that they play a role in mother-infant olfactory communication. The data from the photographs considerably differ from the Areolar Diary, which points to methodological limitations of the self-report data collection.

5

Women choose partner resembling their father in body odourLucie Kuncová¹Zuzana Štěrbová^{1,2}Jan Havlíček^{1,2}¹ Faculty of Science, Charles University, Prague, Czech Republic² National Institute of Mental Health, Klecany, Czech Republic

Women tend to choose partner resembling their father. This effect known as imprinting-like effect was observed in several characteristics, such as hair and eye colour or ethnicity. Although the body odour plays an important role in women's mate choice, the olfactory imprinting-like effect was not explored yet. In our study, we tested perceived similarity between women's partner and father in body odour. We also explored whether the partner-father similarity is influenced by the quality of relationship with father during childhood (at least 12 years). We collected body odour samples from 25 women's partners and fathers. Each woman completed a questionnaire (s-EMBU) to assess a quality of relationship with her father during childhood. The body odour similarity was evaluated by 128 independent female raters. Results showed that raters ordered partner's body odour as the most similar to the father's body odour with frequency higher than chance. Contrary to our assumption, the quality of relationship with father during childhood had no influence on the similarity. Our findings show that women choose partner with similar body odour to their father. This suggests that the imprinting-like effect could be a mechanism for reaching optimal balance between inbreeding and outbreeding. The resemblance was not influenced by the quality of relationship with father, which supports our hypothesis that the resemblance between women's partner and father is due to the imprinting-like effect rather than to other mechanisms such as associative learning. Future studies should focus on the resemblance of the woman's partner and father body odours chemical composition and a relation between woman's partner and father body odours and MHC similarity.

6

**Early marital fertility reduction in local populations:
Evolution story of southern Slovakia one-child families**Ján Aláč¹Ivan Murin²¹ Faculty of Humanities, Charles University, Prague, Czech Republic² Faculty of Arts, Matej Bel University, Banská Bystrica, Slovakia

Changes in the reproductive behaviour of European populations over the past two centuries are characterised by a significant decrease in mortality and population growth, and subsequent decrease in natality and establishment of reproductive stability of population (Mitterauer & Sieder 1982, Didier & Prioux 2019, European Statistical System 2019). The objective of the paper is to present, in the form of micro analytic case studies of Protestant local populations in southern Slovakia (Novohrad, Hont), the relatively very early emergence of single-child family system in the late 19th and the early 20th century. The research uses mainly the methods of anthropology (family typology), ethnography, and sociocultural anthropology (research of cultural transfer and cultural memory). The main goal of the field work is to study the causes and consequences of single-childredness (radical limitation of marital fecundity) in local populations, and to identify cultural and religions contexts of this phenomenon. The presentation belongs primarily to historical demography but also has interdisciplinary dimensions in terms of overlaps with ethnography, cultural anthropology, and cultural evolution.

7

Looking like a million dollars – or not? Attractiveness priming doesn't increase altruism in experimental gamesJulie Nováková¹Jaroslav Flegr¹Kamila Machová¹Kateřina Sýkorová¹Vojtěch Zíka¹¹ Faculty of Science, Charles University, Prague, Czech Republic

The emergence of altruistic behavior constitutes one of the most widely studied problems in evolutionary biology and behavioral science. Multiple explanations have been proposed, most importantly including kin selection, reciprocity and costly signaling (handicap) in sexual selection. We have tested the latter in humans by letting general-population participants (N=124, 51 F, 73 M) first rate the attractiveness of photographs of twenty faces of the opposite (sexually preferred) sex and then play the Dictator and Ultimatum Games as proxies of altruistic behavior. The photograph rating acted as priming; half the participants received photos of people rated as very attractive in an earlier study, the other half received photos previously rated as very unattractive. The attractive-primed participants were expected to behave more altruistically - signaling that they are a desirable, resources-possessing partners, especially in men. However, no significant difference was observed between the two groups. In addition, like most previous studies, we observed a significant ($p=0.001$) difference in Dictator Game giving between men and women, with women giving considerably more to the other player; no such difference was observed in behavior in the Ultimatum Game.

While the lack of any significant difference or trend thereof between attractive- and unattractive-primed participants in our sample doesn't refute the whole handicap theory as an explanation for altruistic behavior, it suggests that other factors may have played a more substantial role in the emergence of altruism in humans.

8

Family factors in the development of Dark Triad traits

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Though studies about the Dark Triad (DT) have been extensive recently, we poorly understand which environmental factors contribute to the formation of these personality traits. In the current two studies we focused on sibling relations as a source of variation in DT traits.

In study 1, we asked adult participants to complete the SRQ-HU (Hungarian version of Sibling Relationship Questionnaire) and the SD3 (Short Dark Triad) questionnaire. In study 2, we asked participants aged under 18 to complete the same questionnaires, and in addition, the sEMBU-A (parental bond) questionnaire.

Results show differences between the two age groups, on the other hand, we can draw these conclusions about both groups: financial state of the family, nature of sibling relationships, relationship with the parents and parents bias towards one of the siblings have an effect on the development of personality traits of the Dark Triad. In contrast, the birth order has no correlation with the development of these traits. Sex of the sibling showed correlation only with the development of the personality traits in the case of adult participants.

9

Link between adult attachment and relationship satisfaction is mediated differently by conflict communication styles in men and women

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Attachment insecurities (avoidance, anxiousness) predict lower relationship satisfaction and the use of specific communication styles within conflict interactions: avoidant individuals use a dominant, avoidant style; anxious individuals use a submissive style. However, it is not clear whether and how communication strategies in conflict interactions mediate the relationship between attachment and relationship adjustment.

Our aim was to test for an association between adult attachment dimensions and relationship adjustment, using a potential mediator effect of communication strategies in men and women.

We analysed data from 76 heterosexual couples, aged 18-40 ($M = 25$, $SD = 4.8$ yrs) in long-term romantic relationships (M relationship length = 4.25, $SD = 3.26$ yrs). Avoidant and anxious dimensions of adult attachment were measured by The Experiences in Close Relationships-Revised (ECR-R-16) questionnaire. Relationship adjustment was obtained by The Dyadic Adjustment Scale (DAS). Six communication styles (compromising, submissive, avoidant, reactive, dominant, and separating) were measured by The Romantic Partner Conflict Scale (RPCS). Women and men were analysed separately.

Path analysis revealed a negative effect of women's level of avoidance on their constructive communication - compromising style ($\beta = -0.49$). Compromising style positively mediated women's relationship adjustment ($\beta = 0.21$). Both women's anxiousness and avoidance positively influenced their reactive style ($\beta = 0.40$; $\beta = 0.27$) which subsequently negatively influenced their relationship adjustment ($\beta = -0.36$). Reactive style in anxious men ($\beta = 0.38$) negatively influenced their adjustment ($\beta = -0.24$). Avoidant communication style in men was surprisingly negatively influenced by their avoidance ($\beta = -0.25$) and positively affected their relationship adjustment ($\beta = 0.22$). No communication style mediated partners' relationship adjustment significantly.

Our results revealed that conflict communication styles differently mediated relationship between attachment insecurities and relationship adjustment in both sexes. In particular, out of six communication styles play the most important role compromising and reactive styles in women, reactive and avoidant communication styles in men.

10

**The role of ritual in creation of strong commitment:
Example from community with shared nonreligious interest**Silvia Boschetti¹Stefano Parmigiani²Harold Dadomo²Paola Palanza³Tomáš Hladký⁴Jakub Binter¹¹ Faculty of Science, Charles University, Prague, Czech Republic² Unit of Evolutionary and Functional Biology, University of Parma, Parma, Italy³ Unit of Neuroscience, University of Parma, Parma, Italy⁴ Faculty of Humanities, Charles University, Prague, Czech Republic

Rituals play a central role in the transmission of beliefs and in the consolidation of social binding between the part-taking individuals. Many rituals are practices of veneration and devotion to some higher power which can be represented by high-status individuals within the community. To test whether it is unique part of religion-related behavior we tested the same concept – participation on (pseudo) religious rituals and rites of passage on group that gathers around non-religious interest, namely BDSM from Czech Republic, country with one of the lowest religiousness. We tested two concepts, one whether interest in the tantalizing relationship of 24/7 devotion or one-night stand. Also, how many of 13 extreme activities would the participants be willing to participate in relation to interest in ritual participation. The study was conducted on more than 3.000 individuals divided to dominant and submissive sub-groups. In all cases the submissive individuals showed higher impact of ritualized behavior on their preferences. We believe our study supports importance of ritualized behavior in other than religious sup-groups of population. Interestingly, individuals may have pre-existing expectation of deeper investment in the relationship associated with ritual participation.

11

**Physiological change via virtual reality –
respiration entrainment**Marta Kowal¹Marcin Czub¹¹ *Institute of Psychology, University of Wrocław, Wrocław, Poland*

Throughout the human history people have been adapting to various conditions, and constantly changing environments. It seems that this innate ability to adjust lies within our nature. Based on this assumption and a body ownership illusion (BOI) paradigm, we conducted an experiment in virtual reality (VR), which goal was to test person's behavior when embodying a virtual avatar. We presented the systematic visuo-inter-ceptive (visuo-respiratory) conflict and assessed whether participants would resolve it by adjusting their respiration rate (RR). We hypothesized that individuals would rather change their respiration rate, rather than stay indifferent to the visual information they perceived through the screens installed on their heads (HMD – Head Mounted Displays). Participants observed the virtual breathing avatar body from the 1st person perspective, while we recorded their respiration rate (RR). At first, the virtual avatar was breathing at the exact same pace as the participant's respiration rate. According to the body ownership illusion (BOI) paradigm, this should evoke a body illusion over a virtual avatar. Then, in the counterbalanced order, each participant saw the virtual avatar to slow down or speed up their breathing rate. If the participant started breathing differently and followed the respiration rate of the virtual avatar, the virtual avatar's change in the breathing progressed (becoming even slower or faster). The dependent variable was a change in participants' respiration rate (RR). Comparing linear regression slope coefficients showed that participants' respiration rate (RR) decreased on average by .48 breaths per minute and increased by .64 breaths per minute. The difference between conditions was statistically significant ($N = 192$, $p < .01$). Our study provided evidence that humans can alter their breathing rate almost unconsciously (as neither the experimental instruction, nor the post-experimental debriefing did not show that participants were aware of the experimental manipulation), simply by seeing other, virtual body, performing such activity at a different speed.

12

Are faces of men with reactive immune system perceived as more attractive and healthy?

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Visual appearance significantly affects social interactions and people make relatively accurate and consistent judgments about others (e.g., age, sex but also attractiveness and health) based on facial cues. Previous studies have shown that people with a more reactive immune system are perceived as healthier and more attractive. Skin colours also play an important role in healthiness and attractiveness judgements; skin yellowness and redness are usually positively associated with these two characteristics.

Here, we tested a possible association between the reactivity of the immune system in response to foreign antigens and perceived facial attractiveness and skin healthiness in men. Further, we investigated the role of skin colour in the formation of these assessments.

We collected standardised facial photographs of 21 men aged 18-40 years before and two weeks after vaccination against hepatitis A (Twinrix) and meningococcus (Menveo). At the same time intervals and one month after the vaccination, we obtained participants' blood samples to determine levels of antibodies (markers of reactivity of immune system). Sixty-two women aged 18-40 years rated photographs regarding their attractiveness on a 7-point scale. Moreover, the raters assessed skin patches from foreheads and cheeks for their healthiness. We also measured skin colour from the facial photographs.

We did not find any significant association between immune system reactivity (assessed by levels of antibodies) and perceived facial attractiveness. Similarly, no significant relationship was revealed for perceived skin healthiness. However, data analysis showed a significant negative relationship between perceived attractiveness and redness of the forehead and also a positive association between perceived attractiveness and cheeks yellowness.

Our results thus suggest no association between immune system reactivity and perceived facial attractiveness or skin healthiness assessed from skin patches. In line with the results of previous studies, skin colour was associated with facial attractiveness judgements.

13

Stability of individual and global social network characteristics

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The social network analysis (SNA) has been increasingly used in behavioral sciences. It provides a variety of specific measures of group structure and its functioning. However, little attention has been paid to the question of how stable is the individual's position and group characteristics in time and in relation to data used for SNA.

The main aim of this study was to investigate three network characteristics ("degree," "closeness," and "betweenness") on individual and two on global network level ("density" and "clustering coefficient") in networks based on three types of behavioral data (approach, sitting in contact, grooming) from two seasons. The behavioral observations were collected on semi-free ranging female Barbary macaques in Gibraltar (n=17). Global level characteristics were in general stable in time with approach data showing the highest stability. On the other hand individual network characteristics were unstable in time, with lowest stability in networks based on sitting in contact. The comparison of individuals' positions based on the use of three different types of data revealed that the individuals did not always have similar network positions. Only the degree characteristics were correlated across grooming and approach data in the first season. In the second season, all three tested network characteristics were correlated in the networks of sitting in contact and approach. On the group level the networks were comparable independent of behavioral data used.

Our results have shown that the social network could be perceived as an image of a particular group at a given time and the comparison of various networks among the studies is limited by the use of different types of behavioral data. The individual's position and its interaction with other partners can then be distinct in terms of different types of interactions.

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Does human body odour contain cues to health status?Dagmar Schwambergová^{1, 2}Žaneta Slámová^{1, 2}Jitka Třebická Fialová^{1, 2}Jan Havlíček^{1, 2}¹ Faculty of Science, Charles University, Prague, Czech Republic² National Institute of Mental Health, Klecany, Czech Republic

It has been previously shown in a various mammalian species, mainly rodents, that body odour might provide cues to health status. Disease-related changes in individual's body odour negatively influence perception of odour attractiveness, resulting in their lower preference or avoidance behaviour by the opposite-sex conspecifics. Similarly in humans, body odour samples of individuals injected by lipopolysaccharide were rated as less pleasant than in healthy controls. In the present study we tested the possible changes in body odour quality before and after vaccination, where vaccination simulated a state of disease by activation of immune system.

Body odour samples were collected twice from 21 men aged between 18–40 years who received hepatitis A and B (Twinrix) and meningococcal vaccine (Menveo) before and two weeks after the vaccination. Samples were collected on cotton pads for 12 hours during the night and participants were asked to refrain from aromatic foods and to forgo the use of fragranced products. We also obtained participant's blood samples two times at the same interval to determine levels of specific antibodies and CRP. A panel of 88 female raters aged 18–40 assessed body odour samples regarding their attractiveness, intensity, and healthiness on a 7-point scales.

We found a significant change in body odour ratings before and after vaccination. However, contrary to our expectations, body odour samples were perceived as more attractive and less intense after the vaccination. The second body odour samples were collected after 14 days when we expected the highest impact on body odour because of the sufficient development of specific antibodies to vaccination. But the possible negative change in perception might probably happen shortly after the injection. When body odour returns back to its baseline quality, a positive change might be magnified at some point, probably two weeks after the vaccination.

Visceral adipose tissue (VAT), subclinical inflammation and Staphylococcus aureus carriage in women – testing the role of VAT as a marker of biological quality

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Studies on visceral adipose tissue (VAT) as a marker of woman's biological quality mainly focused on its relation with metabolic, cardiovascular or fertility problems. There is no study testing VAT and susceptibility to infections which is an important component of an individual's biological condition. Persistent throat carriage of *S.aureus* can be used as a signal of weakened antimicrobial immune defense. Previous studies documented that general obesity increases susceptibility to *S.aureus* carriage, but there is no study linking this susceptibility with directly measured VAT amount (which has a higher immunomodulatory potential than subcutaneous adipose tissue). The aim of this study is to test if higher VAT is related to higher prevalence of the pathogen carriage state. We also suppose that mechanisms linking susceptibility to colonization and VAT include inflammation and/or steroid hormones alteration.

117 healthy women (41 persistent carriage and 76 non-carriage) aged 25-34 participated in the study between 2-4th day of their menstrual cycle. Throat swabs were collected twice within 4-week interval. *S.aureus* was identified by standard microbiological method. Participants with two positive results were classified as persistence carriers, those with both negative swabs culture were non-carriers, whereas those with only one were excluded from the analyses. VAT amount were measured by medical bioimpedance analyzer, VAT-associated physiological markers as inflammatory markers were measured in serum samples. Estradiol, testosterone and cortisol levels were also controlled. Carriage state was independent of VAT amount, also in models controlling for high sensitivity inflammatory markers (hsIL-6, hsTNF- α , hsCRP) or hormones levels (estradiol, testosterone, cortisol) ($p>0.05$). Only IL-6 appeared to be higher in *S.aureus* carriers than non-carriers (marginal significance $p=0.07$).

VAT amount is not a predisposing factor to throat *S.aureus* carriage in healthy young women with BMI between 16.34-33.7 kg/m². Commonly known immunomodulatory factors as inflammatory markers or steroid hormones levels do not mediate the relationship between VAT and the proneness to the studied bacterial colonization.

Stability of male social status among Garisakang forager-horticulturalist of Papua New Guinea

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Social hierarchy appears universal in all human societies. However, the characteristics important to achieving high social status differ cross-culturally. In Western industrialized populations, socioeconomic indices of status (SES) are often used. In small-scale societies, locally relevant traits are used to determine individual social position. Numerous studies have shown applicability of these traditional measures among given populations. However, few studies have tested the stability of social status in small-scale societies. Here, we investigated the stability of male social status over a three-year period (2013-2016) in relatively egalitarian forager-horticulturalists in lowland Papua New Guinea. Social status was assessed twice (2013, 2016) in 25 men across 15 traits using a photo ranking method. Principal component analysis revealed two components labeled as Dominance-Respect and Prosociality-Skills. The congruence coefficients for the two components based on the two data sets were very high (>0.97) revealing the two structures were almost identical. Individual scores of the 25 men were correlated across the two assessments. The correlation of Dominance-Respect scores was 0.94 ($p < 0.05$) and of Prosociality-Skills scores 0.88 ($p < 0.05$). Our results not only show stability of social rank over this relatively short-term period but also suggest that the employed method and traits were reliable assessment tools of male dominance status in small-scale society.

She always steps in the same river: Similarity among long-term partners in their demographic, physical, and personality characteristics

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In mate choice, individuals consider a wide pool of potential partners. It has been found that people have certain preferences, but intraindividual stability of mate choice over time remains little explored. We tested individual consistency of mate choice with respect to a number of demographic, physical, and personality characteristics. Only mothers were recruited for this study, because we wanted to find out not only whether women choose long-term partners with certain characteristics but also whether the father of their child(ren) differs from their other long-term (ex-)partners. Women (N = 537) of 19–45 years of age indicated the demographic, physical (by using image stimuli), and personality characteristics of all of their long-term partners (partners per respondent: mean = 2.98, SD = 1.32). Then we compared the average difference between an individual's long-term partners with the expected average difference using a permutation test. We also evaluated differences between partners who had children with the participants (fathers) and other long-term partners (non-fathers) using permutation tests and mixed-effect models. Our results revealed that women choose long-term partners consistently with respect to all types of characteristics. Although effect sizes for the individual characteristics were rather weak, maximal cumulative effect size for all characteristics together was high, which suggests that relatively low effect sizes were caused by high variability with low correlations between characteristics, and not by inconsistent mate choice. Furthermore, we found that despite some differences between partners, fathers of participants' child(ren) do fit their 'type'. These results suggest that mate choice may be guided by relatively stable but to some degree flexible preferences, which makes mate choice cognitively less demanding and less time-consuming. Further longitudinal studies are needed to confirm this conclusion.

Cladistic analysis of the Standard Cross-Cultural Sample

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The historical relatedness and cultural similarity of ethnolinguistic groups (EGs) is to a large extent determined by their geographic proximity. Murdock (1957) classified EGs in his ethnographic sample into 6 culture areas or regions. The borders of these regions essentially follow the continental borders and lack any formal justification. In response to Murdock definition of regions, Burton et al. (1996) established 9 regions and measured cultural similarity within and between them.

In this study we perform a series of cladistic analyses of 186 societies from Murdock's Standard Cross-Cultural Sample in order to formally investigate the extent to which cultural similarities between EGs are consistent with population history and proposed regional classifications. Unlike previous classification attempts, our analysis doesn't assume any a priori geographic clustering. A hypothetical outgroup was coded based on character states in present-day African hunter-gatherers.

The consistency index (CI) and retention index (RI) of our dataset for cultural datasets are very low (multistate dataset: CI=0.5, RI=0.52; binary dataset CI=0.7, RI=0.43). This suggest a rampant homoplasy and convergence in human cultural adaptations. Several historically related EGs form clades based on their cultural similarities as well (e.g. Bantu-speaking societies in Africa or Austronesian-speaking societies in Insular Pacific region). On the other hand, EGs from some regions (particularly North and South America) are scattered across the topology of the tree. The trees based on multistate and binary-coded characters differ substantially, suggesting that our ability to infer a formal classification of EGs based on cultural similarities may be hindered by a priori assumptions about (the direction of) evolution of cultural traits.

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Body attractiveness and visceral fat amount in normal weight women

Małgorzata Mucha

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According to evolutionary hypothesis, physical attractiveness is a cue of an individual's biological condition. Obesity negatively affects both health and fertility—the key components of a woman's biological condition, so men preferences for women's body with relatively low amount of fat can be adaptive. Epidemiological studies indicate that it is visceral adiposity (VAT) that has more negative effect on health than general adiposity. The aim of this study was to check whether in a group of women with the normal (considered as healthy) BMI range, the bodies of women with higher VAT amount will be assessed as less attractive.

149 healthy, regularly cyclic women aged 20–35 participated in the study between 2nd–4th day of their menstrual cycle. 49 women with actual infection, chronic diseases, BMI below/above normal ranges or incomplete data were excluded. The analyses included 100 women with BMI between 18.5–24.9 kg/m². Body photographs, anthropometric measurements, bioimpedance VAT analysis were performed and blood samples were collected. Participant's age and sex hormones levels were controlled. The attractiveness of women's bodies was rated by ca 100 men using online survey and 1–9 scale (each men assessed ca 15 photos).

The results showed that body attractiveness was negatively predicted by VAT (controlling for sex hormones). However, BMI more strongly affected the attractiveness assessment than VAT. Additionally, BMI was negatively related to estradiol and E/T ratio, whereas VAT was only marginally related to hsCRP—markers of long-term health.

Men's preferences for women's body shape characterized by a low amount of VAT seems to be adaptive, as a greater amount of VAT might be a signal of health problems, especially in the future. However, observation that BMI which correlates with sex hormones level better predicts a woman's attractiveness assessment than VAT (correlate of hsCRP) suggests that physical traits signaling a woman's fertility are more important than markers of long-term health.

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Variation in romantic relationship typesAyten Yeşim Semchenko¹Gulşevim Eysel²Zsófia Csajbók¹Pinar Kaya-Kurtman³Zuzana Štěrbová^{1, 4}Jan Havlíček¹¹ Faculty of Science, Charles University, Prague, Czech Republic² Van Yuzuncu Yil University, Van, Turkey³ Independent Researcher⁴ National Institute of Mental Health, Klecany, Czech Republic

Previous theory-driven literature indicates that there are two main types of romantic relationships (i.e., long-term committed and short-term uncommitted) of romantic relationships. This dichotomous categorization, however, may not cover the full variation in romantic relationship types. Therefore, data-driven studies were needed. In an attempt to fulfill that need, semi-structured in-depth interviews were conducted in Ankara, Turkey. The snowball sampling technique was used for recruitment. However, the sample size was limited ($N_f = 20$, $N_m = 20$). Therefore, the interviews were complemented by an online qualitative study with a larger sample ($N_f = 136$, $N_m = 105$; with the participation from 17 cities of Turkey). The online survey was distributed via social media. Both studies included questions inquiring about the romantic relationship experiences of the participants and the people around them. The average ages of the participants were 25.3 (SD = 2.06) and 25.7 (SD = 4.94), respectively.

Two native speakers conducted the phenomenological content analysis. The analysis of the interviews identified various types of relationships (e.g., marriage, friends with benefits, arranged marriage with/out consent, and rebound relationships) and relationship characteristics (e.g., planning a future, friendship, temporality, commitment, family approval, and consensuality). Furthermore, temporality and commitment were, to some extent, shown to be independent characteristics. The content analysis of the latter study resulted in additional relationship types (e.g., pre-engagement, child marriage, platonic relationships, and patchwork relationships) and relationship characteristics (e.g., genetic relatedness between partners, approval from social network, perceived warmth, overtness in familial/social/public environment, and having mutual respect) compared to the previous study. Future studies are needed to test the generalizability of these findings.

Predicting combat outcome: A video-based behavioral analysis of MMA fighters' performance

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Physical aggression among men has strong roots in human evolutionary history. Greater variance in reproductive success in males compared to females leads to more intense male competition, hence more aggressive behavior. Physical encounters or fights are complex events and assessing them requires to take various characteristics into account including fighting ability, perception of opponents and their formidability.

Among factors determining the victory are: strength, endurance, dexterity, and the ability to employ certain techniques. In the present study we investigated whether combat outcome can be predicted based on different techniques performed by fighters during a given bout in Mixed martial arts (MMA), a physically highly demanding multi-elemental full-contact combat sport.

Our sample consists of 75 fights and a total of 150 fighting individuals (males) recorded during the 2016 IMMAF amateur Championship. We took only the first round of each fight into consideration. The round lasted up to 3 minutes but sometimes ended earlier due to a referee's decision or competitor's submission. To examine fighting performance we used an ethogram designed for this study. It included items such as frequency of strikes, takedowns, or duration of grappling, pounding, cage dominance, and others. Behavioral displays were coded with Mangold Interact 9 software. In addition to combat outcome we controlled for ending factor (submission, technical knockout, knockout, decision).

To reduce the number of independent variables we performed principal components analysis (PCA) with oblique rotation on standardized items. The PCA yielded three individual factors (Striking, Clinching, and Grappling) that accounted for 33.34% of total variance. Factor scores were compared using paired samples t-tests between losers and winners. Scores in all three factors were significantly higher for winners, with effect sizes ranging from small to moderate (Cohen's *d* from 0.32 to 0.62). Repeated measures ANOVAs were conducted to compare the ending factor variable showing no differences between ending factors.

Previous studies showed that both different techniques and different intensity of actions displayed during combat can have an impact on the outcome of the fight. Our study presents additional evidence in line with these findings. Being more dominant and active during a fight leads to higher chance of winning.

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Cumulative evolution of films: Three case studiesOleg Sobchuk¹Peeter Tinitis²¹ *Minds and Traditions research group, Max Planck Institute for the Science of Human History, Jena, Germany*² *Faculty of Social Science, University of Tartu, Tartu, Estonia*

Does art become more complex over time? In cultural evolution, complexity has been considered in relation to cumulative cultural evolution: through the retention of beneficial traits, culture can become more complex or better fit to fulfilling its functions. Cumulative culture has been found in areas where “progress” is easy to notice, e.g. technologies or institutions. However the relevance of cumulative culture for arts remains an open question. In this paper, we intend to empirically demonstrate three cases of cultural accumulation in film history.

In the recent years, the progress in digital humanities allowed testing hypotheses about art evolution with quantitative evidence. Online databases of art-related information, such as GoodReads, Last.fm, or IMDb allow detecting complex cultural trends in artistic evolution, related to such topics as art complexity, success of artworks, stylistic evolution, etc. In our study, we apply the tools of digital humanities to assess the question of artistic complexity - in particular, the complexity of film evolution.

We will present three case studies on the evolution of film complexity. During the 20th century (1) films on average tended to include a greater number of shots - due to the shortening of average shot length; (2) film production crews for popular films became much larger and obtained a more complex hierarchical structure. (3) During the 1970s-2000s popular American mystery films obtained a more complex temporal structure - with more flashbacks and flashforwards, as well as more “timelines”: individual stories located in different points of time.

These results indicate that at least for some areas of art, cumulative cultural evolution can prove a relevant and productive research topic. Not only films, but also other arts could grow in complexity, although the exact areas where this is happening are yet to be discovered.

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Women's body attractiveness and adipokins levels in womenIda Studzińska¹Agnieszka Żelaźniewicz¹Judyta Nowak¹Bogusław Pawłowski¹¹ Department of Human Biology, University of Wrocław, Wrocław, Poland

Physical attractiveness is thought to signal individuals' biological condition. Body adiposity is one of the crucial traits influencing women's physical attractiveness. This may be explained by the fact that due to its high secretory activity, adipose tissue exerts an enormous impact on various aspects of women's biological condition. Adiponectin (ADPN) and leptin (L) are the key hormones secreted from adipose tissue, and may be a proximal mechanism responsible for the relationship between body adiposity and attractiveness as they affect a wide range of body functions. Leptin, regulating our appetite, has also a negative effect on health and fertility. In contrast, ADPN plays a protective role against negative impact of high body adiposity, and positively correlates with health and fertility. The aim of this study was to verify if L and ADPN levels are reflected in women's physical attractiveness. We hypothesized that L negatively and ADPN positively correlate with attractiveness. The study was conducted on 134 women, aged 25-34 (M=28.50, SD=2.42). Fasting serum ADPN and L levels were measured. Body photos were taken. Participant's body attractiveness was evaluated based on photos, on a scale from 1 (unattractive) to 9 (very attractive), in on-line questionnaires, by men. Serum testosterone, estradiol, cortisol, hsCRP levels and BMI were controlled in the analyses. The results showed that body attractiveness correlated positively with ADPN level ($r=0.24$, $p=0.006$) and negatively with L level ($r=-0.47$, $p<0.001$), also when controlled for steroid hormones and hsCRP levels. Correlation coefficients for the relationship between attractiveness assessment and L were stronger, compared to the correlation between attractiveness assessment and ADPN. Furthermore in women of normal weight (BMI<25), ADPN did not predict physical attractiveness ($r=0.17$, $p=0.08$), whereas L was also negatively related with physical attractiveness ($r=-0.27$, $p=0.004$). The results suggest, that women's physical attractiveness is better predicted by L, hormone of a negative impact on biological condition, compared to ADPN, hormone beneficial for health and fertility. This result is consistent with "bad genes avoidance" hypothesis, suggesting that in mate choice context selection acts more strongly on avoiding "bad genes" than on hunting for "good genes".

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Trade-off between facial attractiveness and verbal proficiency

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Romantic partner's choice is a complex one. Most of the attractiveness research focuses on investigating one trait at a time, seen from a narrow perspective. It is usually presented to participants in artificial research conditions, far from the ones occurring in everyday life. For instance, photos used during facial attractiveness research present still faces deprived of a smile, photographed from the front, with well-exposed symmetry (or lack of it), whereas faces seen in real life are more dynamic and present emotional expressions.

An even more significant problem is researching single traits, without taking into consideration the whole picture. In partner choice, one is nearly never exposed to only a single trait such as still face, unemotional voice or grayed silhouettes with differing WHRs. Every specimen of *Homo sapiens sapiens* is a complicated set of physical and psychological characteristics. What's more, it is a rare situation to meet a perfect prospective partner who has all the desired traits. Trade-offs between several traits are inevitable.

In the current research, two attractiveness traits were investigated together in order to determine which of them has a stronger influence on partner choice. The first trait was facial attractiveness, the second was verbal proficiency level. Verbal proficiency is a set of linguistic features of one's speech. Higher level of verbal proficiency (i.e. a richer vocabulary, more complex grammar structures, less pauses and disfluent utterances such as "uh") has been rated as more attractive in previous research (Lange et al. 2014). In the current research, female participants were exposed to stimuli composed of a more or less attractive male face and a recording of a minute-length speech of a higher or lower level of verbal proficiency. Attractive face-low proficiency combination was rated higher in facial attractiveness and less attractive face-higher proficiency combination was rated higher in intelligence level. No significant difference was found in rating of general attractiveness.

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**Fear with eight legs:
A cross-cultural comparison of relationship to spiders**Markéta Janovcová^{1,2}Eva Landová^{1,2}Natavan Bakhshaliyeva³Akif Guliyev³Daniel Frynta^{1,2}¹ National Institute of Mental Health, Klecany, Czech Republic² Faculty of Science, Charles University, Prague, Czech Republic³ Faculty of Biology, Baku State University, Baku, Republic of Azerbaijan

Spiders represent a significant group of animals triggering negative emotions and causing the most frequent animal phobias. To make a cross-cultural comparison of relationship to spiders, we conducted research on students from Baku State University in Azerbaijan and Charles University in the Czech Republic. First, we tested fear of spiders by sorting standardized pictures (spiders, arachnids and other invertebrates). The results show that people in both countries find the scariest big hairy spiders with strong legs, i.e. the tarantula type with a considerable (cross-cultural agreement: $r_2=0.398$, $p<0.0001$). In a following experiment (measurement of physiological reactions, results are being processed), photos and videos of three spider species, the tarantula (*Brachypelma vagans*), the poisonous “black widow” (*Latrodectus mactans*) and the common house spider (*Tegenaria domestica*) were shown to respondents. Each species was presented on both the ground and human hand (the real size of the spider was visible). After the presentation, each respondent rated perceived fear of each stimulus on a 7-point scale. Students from Azerbaijan considered the tarantula as the scariest spider, while the house spider elicited the lowest fear. The black widow lies between these two groups. The Czech respondents demonstrated similar fear of tarantulas and black widows, although they were able to distinguish them well. The spontaneous reports showed that the majority of the Czech respondents knew it was the venomous black widow. Again, the lowest fear was triggered by the house spider. In both countries, the type of spider affects fear assessment, no matter the type of presentation (photo / video, on the ground/hand). Both experiments signify that the respondents are most frightened by the large tarantula-like spiders. Furthermore, they are able to recognize harmless small common species (occurring in both countries), but their relationship to other species is different.

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“B*tch, be humble!”: The cultural transmission of value systems through narrative artJan Horský^{1, 2}¹ *Laboratory for the Experimental Research of Religion (LEVYNA), Masaryk University, Brno, Czech Republic*² *Department for the Study of Religions, Masaryk University, Brno, Czech Republic*

Morality changes. It is not a static system with a fixed and universal set of moral norms that would be stable both across societies and throughout the lifespan of an individual moral agent. It is not that surprising given that we live in a diverse and unstable environment that requires flexible behavioral responses (various foraging strategies, ways of attack and escape, norms governing the social life, etc.) for an animal like us to prosper in it. Crude and inflexible moral intuitions that have been fixed in us by the forces of natural selection need to be supplied with some update based on the local needs and challenges that a given habitat presents. A fixed behavioral pattern is abandoned in favor of a more flexible solution in the form of cultural transmission through social learning.

In my poster presentation, I will focus on more informal modes of moral norms acquisition, such as those we can recognize in various forms of narrative art. I will argue that we should pay attention to these for two main reasons. (1) Narrative art (oral traditions, books, movies, TV shows, songs) almost always covers some socio-moral issues, its production and consumption have a fixed developmental trajectory, and people spend an inordinate amount of time enjoying it. And (2) for reasons that have mainly to do with a non-reflective nature of a lot of moral processes, contemporary moral psychology is somewhat skeptical about the possibility of formal moral education to bring about the moral change in its recipient. It rather emphasizes the role of informal approaches (e.g., narratives) set in a specific and emotionally saturated context.

On this basis, I will argue that narrative art is an evolutionary adaptation functioning as information storage about local moral norms which coordinate social living, but also as a tool to criticize and transgress them. As a case study, I will focus on moral and religious storytelling contained in contemporary American rap music.

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Aggression and level of oxidative stress in healthy subjectsKatarzyna Szewczyk-Skorupska¹Agnieszka Żelaźniewicz²Piotr Sorokowski¹Bogusław Pawłowski²Agata Groyecka¹Judyta Nowak²¹ Institute of Psychology, University of Wrocław, Wrocław, Poland² Department of Human Biology, University of Wrocław, Wrocław, Poland

Aggression is a phenomenon that can be considered through the prism of behavioral, psychological, social or biological characteristics. Most studies on physiological mechanisms of individual's proneness to aggressive are focused on hormonal mechanisms, especially testosterone. Also, many studies show that both animal and human behavioral traits associated with hostility, anger, and tendencies to aggressive behavior are associated with an increased level of inflammatory markers. Furthermore, previous studies showed that individuals with the intermittent explosive disorder, a behavioral disorder related to aggressive outbursts, have higher oxidative stress level. However, up to date, there are no studies on the relationship between oxidative stress level and aggression in healthy people. Thus, the aim of this study was to verify if the oxidative stress level is related to aggression in healthy people. We hypothesized that more aggressive individuals will be characterized by a higher oxidative stress level. The hypothesis was tested on a sample of healthy 137 men (Mage=27.96, SD=2.99) and 93 women (Mage=26.45, SD=2.76). The oxidative stress level was evaluated based on serum, 8-OH-dG level, a biomarker of oxidative DNA damage. Sex, BMI and serum cortisol level were controlled in the analyses. Aggression was evaluated based on a self-reported questionnaire. We found a positive correlation between 8-OH-dG and self-reported aggression level ($\beta=0.16$, $p=0.02$) when controlled for sex, BMI and cortisol level. The results suggest that oxidative stress is related to self-reported aggression level in healthy individuals. This contributes to our knowledge of the biological basis of this psychological and behavioral phenomena and increases the chances for better understanding aggression and search for more accurate solutions in the various areas of working with it.

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Higher sexual desire in ill people as a manifestation of their fast life strategyKateřina Sýkorová¹Jaroslav Flegr^{1,2}¹ Faculty of Science, Charles University, Prague, Czech Republic² National Institute of Mental Health, Klecany, Czech Republic

Numerous studies have shown that factors indicating a harsh and unpredictable environment, and hence shorter life expectancy of its inhabitants, induce switching to a fast life strategy. Such switching is characterized by higher investment in early reproduction which is an adaptive shift of organisms with a low life expectancy. We can observe an increased reproductive effort in response to a higher sickness rate in various animal species. The same might also hold for humans - an increased sickness could cause slight but long-lasting stress that could be manifested by adopting a fast life strategy. Therefore, we hypothesized that people with worse health exhibit a higher sexual desire. In an electronic survey, we gathered data about sickness and sexual desire from 10,195 women and 11,866 men. The data were analyzed by univariate linear regression models (GLM) that included potential confounding variables such as age, being currently in a partnership, education, and socioeconomic status. We found a significant positive association of sickness with sexual desire in women and men. However, GLM analyses also revealed a negative association between sickness and sexual activity in both genders. Therefore, we used path analysis to test whether the higher sexual desire of people with impaired health is a consequence of their lower sexual activity. The results showed that sickness had a direct negative effect on sexual activity; however, it had also a direct positive effect on sexual desire in both women and men. Our results suggest that sickness of an individual, which might lead to shortening the life expectancy, might also induce subconscious switching to the fast life strategy. In modern humans, however, such a strategy does not result in increased sexual activity and therefore has no positive effect on biological fitness.

Decoding of emotions from vocalizations of preverbal human babies and young piglets

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It has been long suggested that two major dimensions of the current affective state, namely its valence and intensity, may be reflected in mammalian voices in a similar way across species. This implies that cross-species de-coding of emotions from voices should be possible and may be based on a common mechanism. We analysed how situations differing in emotional valence and intensity are encoded in vocalisations of preverbal human babies and suckling piglets and how adult humans decode them. We found striking similarities in the following mechanisms through which emotions and the situation identity are encoded in and decoded from piglet and from baby vocalisations: (i) the perceived valence and intensity were strongly correlated across calls emitted in negative situations but were uncorrelated in positive situations; (ii) the gross categories of negative and positive situations were distinguished with high accuracy, seemingly based on perceived valence; (iii) the discernment between specific situations within the gross negative category (e.g., pain versus isolation) or within the gross positive category (e.g., satiation versus social contact) were much less accurate and were partly based on the perceived intensity. We suggest that the ability of adult humans to assess needs of preverbal babies from their calls has deep mammalian roots and therefore enables humans to understand emotion-loaded calls of other mammalian young.

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Assessing interactions of handedness and sex on verbal memory performance in large-scale population study

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Gender differences in cognitive abilities and brain function are a well documented phenomenon. It is the resultant of multiple biological and environmental factors, such as varying exposure to sex hormones in prenatal and postnatal development, differences in education and cultural environment. Among the notable examples of the differences between cognitive abilities in men and women are verbal functions. Specifically, women tend to perform better than men in verbal memory tasks.

The difference in verbal memory performance seems to be connected to lateralization. Left lateralized processing for speech is predominant in both sexes, but it is especially pronounced in males. This effect can be, however, influenced by handedness. While around 95% of right-handers can be characterized by left-lateralized language representation dominance, 14% of left-handers have bilateral, and 8% have right-lateralized language representation. This in turn may influence verbal functions. As shown in previous studies, left-handed males tend to perform similarly to females in verbal memory tests. The strength and origin of left-handed tendency seem to be not without relevance either and have to be controlled for.

The aim of this study is to investigate verbal memory performance in connection to sex and handedness of participants.

Using web-based battery Memoro, we are currently investigating cognitive abilities in one of the world's largest prospective general population studies; Helseundersøkelsen i Nord-Trøndelag (HUNT4). Participants of HUNT4 are invited to our substudy (Hjernetrim) via regular mail. They are asked to log on to the Memoro website and perform 13 cognitive tasks (verbal memory test is one of them). Data on handedness, education, age, and sex is collected via questionnaire. Verbal memory test that we use is based on Auditory-Verbal Learning Test. So far, 5565 people participated (58,1% females).

Preliminary analyses suggest that there is a clear difference in performance between females and right-handed males (both left- and right-handed females perform better). Difference in performance disappears when females are compared to left-handed males. Data collection is ongoing, but results seem to be consistent with reports from previous studies.

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Perceived attractiveness of Czech faces across 10 cultures: Associations with sexual shape dimorphism, averageness, fluctuating asymmetry, and eye colorTomáš Kočnar¹¹ Faculty of Science, Charles University, Prague, Czech Republic

Research on the perception of faces typically assumes that there are some universal values of attractiveness which are shared across individuals and cultures. The perception of attractiveness may, however, vary across cultures due to local differences in both facial morphology and standards of beauty. To examine cross-cultural consensus in the ratings of attractiveness, we presented a set of 120 non-manipulated photographs of Czech faces to ten samples of raters from both European (Czech Republic, Estonia, Sweden, Romania, Turkey, Portugal) and non-European countries (Brazil, India, Cameroon, Namibia). We examined the relative contribution of three facial markers (sexual shape dimorphism, averageness, fluctuating asymmetry) to the perception of attractiveness as well as the possible influence of eye color, which is a locally specific trait. In general, we found that both male and female faces which were closer to the average and more feminine in shape were regarded as more attractive, while fluctuating asymmetry had no effect. Despite a high cross-cultural consensus on attractiveness standards, significant differences in the perception of attractiveness seem to be related to the level of socio-economic development (as measured by the Human Development Index, HDI). Attractiveness ratings by raters from low-HDI countries (India, Cameroon, Namibia) converged less with ratings from Czech Republic than ratings from high-HDI countries (European countries and Brazil). With respect to eye color, some local patterns emerged which we discuss as a consequence of negative frequency-dependent selection.

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**A synthetic view of the origins
and history of sign languages in Europe.**Aleksandra Poniewierska¹Aleksandra Szczepańska¹¹ *Center for Language Evolution Studies (CLES), Nicolaus Copernicus University, Toruń, Poland*

This poster is meant to present the history and origins of the sign languages in Europe. From the earliest known examples in literature until the 21st century with over 30 sign languages on this continent.

Our work progresses from the earliest mentions of communication between the deaf in literature, through the many manuals published in the 17th century, to the most contemporary families of sign languages. First, we will discuss the situation of the deaf people in Europe during the Antiquity, the Middle Ages and the Modern Period. We will also enumerate the first mentions of a standardised sign language. Then, we move to the 18th and 19th century as these were the crucial periods for the evolution of the sign languages. Next, we will move onto the subject of spreading of those existing languages and finally we will finish by showing sign language families and commenting on the changes that are still occurring in sign languages.

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Cross-group comparison of Asian-Vietnamese, Czech-Vietnamese, and Czech attractiveness assessment of European facesOndřej Pavlovič¹Vojtěch Fiala¹Karel Kleisner¹¹ Faculty of Science, Charles University, Prague, Czech Republic

What role does visual diet play in perceptions of facial attractiveness? In the Czech Republic there is a large community of Vietnamese immigrants (around 60,000). The second generation, sometimes self-nicknamed the “Banana generation”, was either born in Czechia or spent the majority of their life there and are almost fully integrated to the Czech society, speaking the Czech language fluently, and attending Czech schools and universities.

In this study, we focused on differences in attractiveness perceptions of European faces of Czech origin rated by Vietnamese people living in Czech Republic and Vietnamese people permanently residing in Vietnam. We tested whether the attractiveness judgments of Vietnamese people living in Czech Republic would be closer to those of Czech raters than to raters born and steadily residing in Vietnam. The Czech, Czech-Vietnamese, and Asian-Vietnamese raters of both sexes rated facial portraits of 100 Czech participants (50 men and 50 women, standardized, non-manipulated) for attractiveness. Further, we investigated the relative contribution of morphometrically measured level of sexual shape dimorphism (SShD) and averageness (AVRG) to the perception of facial attractiveness in all three groups of raters.

We showed that the ratings of attractiveness were more closely correlated between Czech and Czech-Vietnamese raters than between Czech-Vietnamese and Vietnamese raters, and that this difference between correlations was statistically significant. Among all groups of raters, facial averageness positively affected perceived attractiveness which is consistent with „average is attractive“ hypothesis. A significant influence of sexual shape dimorphism on attractiveness rating was found only in Czech male raters; Czech-Vietnamese and Asian-Vietnamese of both sexes did not utilize traits associated with SShD as a cue of attractiveness. We thus present evidence that Vietnamese people permanently living in the Czech Republic converge with the genuine Czech population in perceptions of facial attractiveness, thus adopting some of the Czech standards of beauty.

The Live yurt hypothesis

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For decades, scientists have been baffled by the unique pattern of human fur. Although we can find distant parallels in other primates and even ungulates, humans are the only bald animals that retained rich, constantly growing hair on their heads. On top of that, the human mane is sexually dimorphic. It covers the face except for the ocular and forehead area in men, but it is strictly limited to the scalp in women.

It is unlikely that human fur patterns emerged solely as a by-product. Sexual selection, sweaty thermoregulation, upright locomotion, male-to-male competition, parasite avoidance, aquatic lifestyle, or the combination of all abovementioned phenomena can in principle explain the described fur patterns. The evidence supporting these theories is still rather patchy and the description of the evolutionary tapestry of human hair is far from complete. There is still room for one more hypothesis.

First recorded artificial shelters do not date back more than 400 000 years, the extensive fur loss in our species is, however, of a more ancient origin. We argue that hominid troops roaming prehistoric grasslands benefitted from sweaty thermoregulation through the naked skin during the day, while they snuggled together to form a “live yurt”, a primordial tent of some sort, during the night. The heat remained inside the pile of human bodies due to the collective coat formed by the long hair, but it conducted easily skin-to-skin between individuals. While most members of the troop faced inside the live yurt exposing only their scalps and backs, old males served as night-guards, taking turns in a predator watch, staying awake facing the landscape. Extensive beards could have evolved in men as an adaptation to this night vigilance, allowing for perfect insulation of the yurt.

Such behavior would not leave a trace in the archaeological record, but we might be able to find its correlates in the minds of our conspecifics today. Out of 354 pictures of night-guards drawn by children under the age of 10, 7 contained prominent facial hair, while there were only 4 bearded pictures of other professions – firemen and baristas ($\chi^2=2.85$, $p=0.09$). Drawings of older children ($N=426$), whose archetypal representations are substantially amended, did not show this trend.

Different group sizes correspond to different feasible configurations of bodies forming the live yurt. The evolution of human group size, brain size, and fur patterns should, therefore, go hand in hand.

35**Testing new method of estimating partner preferences**Kamila Machová¹Jaroslav Flegr¹¹ Faculty of Science, Charles University, Prague, Czech Republic

A new method estimating preferences of various characteristics in short- and long-term partners was suggested by Flegr at his co-workers (2018). This method is based on respondents rating of attractiveness, niceness and various characteristic of faces on photos. The preference of a given characteristic is estimated as a correflation of the characteristics rating and the rating of either attractiveness or niceness. Attractiveness serves as a proxy of attraction in short-term mating context and niceness in the long-term. This method can be used in online questionnaires, but (unlike getting preferences using a direct question) is not influenced by the conscious opinions of respondents.

Here we present new research concerning this method.

Firstly, we evaluated the suitability of attractiveness and niceness as proxies of appealing in the short- and long-term mating contexts. We found out that, attractiveness but not niceness is the suitable proxy since the rating of attraction in the long-term mating context correlates more with many other characteristics than with niceness.

Secondly, we tested, how much mean computed preferences differ if we calculate a preference of a given characteristic by given respondent using mean rating of the characteristics of several other respondents instead of the single rating of the given one. We found out that the difference is relatively small, which enables us to use means and considerably decrease the necessary number of raters.

Lastly, we tested whether mean preferences differ concerning the type of object on rated photos. We found that using men is comparable to using women and using cats is comparable to using dogs, but using animals is not comparable to humans, and neither of these groups is analogous to using cars. We concluded that the method is not that robust that we expected. We will test it using another set of human photos in the future.

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**The emergence of word-like phonology –
an iterated learning experiment**Julia Trzeciakowska¹¹ *Center for Language Evolution Studies, Nicolaus Copernicus University, Toruń, Poland*

It is an age-old idea that language emerged from resemblance-based vocal signals such as imitations of the sounds of nature. Recent research (Edmiston, Perlman and Lupyan 2017, 2018; Imai and Kita 2014) revives this idea and emphasizes the significance of iconicity for the evolution of language in the auditory-vocal modality. The present study addresses this issue and is based on the recently published research conducted by Edmiston et al. (2017, 2018) in which participants iteratively imitated one another's vocal productions (person 1's output is person 2's input, etc. - cf. the children's game 'Telephone'). The results showed that conventional spoken words can 'evolve' and stabilize from vocal imitations of environmental sounds. However, these studies are novel and so far have investigated speakers of only one language, i.e. English. Hence, these results stand in want of verification with data from other languages and language groups, so as to answer the question whether the emergence of worldlike phonology through iterated vocal imitations of environmental sounds is a universal phenomenon. Here, I report preliminary findings of an ongoing study with Polish university students. Twenty-one participants created vocal imitations of environmental sounds (e.g. glass breaking) and conventional onomatopoeic sounds (e.g. clock ticking) by means of transmission chains up to seven generations of imitations. Then, each imitation from the first and last (i.e. seventh) generations was transcribed into Polish orthography by another group of forty participants. Following Edmiston et al., I assumed that if imitations are becoming more word-like, they get easier to transcribe, so that the agreement between participants orthographic transcriptions (measured as average Levenstein distance) should increase over generations. Contrary to the hypothesis, the initial data do not show the transcriptions of the sounds from later generations to be more similar to one another, as measured with Levenstein distance. The presentation will discuss this result, looking in particular into possible causes of why it differs from the published studies.

The influence of socio-economic factors on Body Mass Index perception among university female students

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The prevalence of body image dissatisfaction is considered high in both developed and developing countries. A better understanding of the factors that affect self-perception of body characteristics may play an important role in weight control practices

The aim of the present study was to identify the relationships of the self-perception of BMI with socio-economic factors among young women.

The research was conducted among 1200 unmarried and childless female university students, aged 19-25 years. The measurements of body height, body mass, waist and hip circumference were taken. Each person completed a questionnaire. For the evaluation of body image perception, a following question was asked: Do you think that your body mass is: too low; correct or too high?

No socioeconomic differences in BMI, WHtR and prevalence of underweight and overweight as well as too low and too high amount of abdominal adiposity were found. 65.2% of the surveyed students correctly estimated, 30.3.% overestimated and 4.5% underestimated their body weight. Underweight women tended to incorrectly assess their body weight more often than normal weight women or overweight women. Among normal weight women socioeconomic factors were significantly associated with the BMI perception. Students from urban area and students whose mother have higher education more often overestimated their weight status than others students. Students, who have sisters, especially older sisters, more often overestimated their weight status than students who have brothers. Women without siblings the least frequently declared that their weight is too high.

Socioeconomic status of the family significantly has a significant impact on the self-perception of BMI, even in such a homogenous groups as university students.

Information donation versus displays: Two types of pantomime in language evolution

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Pantomime is an intriguing system of communication, which unlike language does not depend on semiotic conventions and yet – like language – is capable of communicating an open-ended variety of meanings that include abstract concepts. Consequently, pantomime has attracted much interest as a candidate evolutionary precursor to language, with both the proponents (e.g. Arbib 2012, Gärdenfors 2017, Zlatev et al. 2017) and critics (e.g. Abramova 2018, Cartmill 2018) focusing on the proximate-level, cognitive underpinnings of pantomime. However, from an ultimate-level perspective of signalling theory (e.g. Maynard Smith & Harper 2003), a more fundamental variable is the alignment of interests between the communicators (Searcy & Nowicki 2005): aligned interests predict cooperative information donation, but disaligned interests predict costly displays (Krebs & Dawkins 1984). In this talk, we suggest that these two conditions map onto two distinct types of pantomime, which have different functional specifications that lead to different structural properties. Aligned interests result in pantomime-as-information-donation, with minimal strategic cost, reduced movements, and pressures for energetic efficiency ultimately resulting in conventionalisation. Conversely, disaligned interests lead to pantomime-as-display, with a high strategic cost, exaggerated movements, and pressures for impressiveness that prevent conventionalisation. Such “pantomime as display” might have laid the foundation for artistic performance and ritual (cf. Gärdenfors 2018, Knight 2014), but not for the evolution of language, which instead requires “pantomime as information donation”. A critical consequence is that pantomimic language-origins scenarios must presuppose some form of population-level communicative alignment of interests (or “a platform of trust”, Wacewicz & Żywicznyński 2018). Finally, we discuss the interesting case of pantomimic teaching (Gärdenfors 2017), which qualifies as information donation and yet has some features of “pantomime as display”.

Measuring sexual dimorphism in facial contrast: A case from central-west Africa

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Sexual dimorphism in human faces consists of many different cues. Apart from morphology, there are believed to be significant differences in skin color and lightness. Previous studies have shown sexual dimorphism in overall lightness (in most populations, men are darker than women), and in facial contrast (women have darker eyes and lips and lighter eyebrows in contrast to surrounding skin than men). Both these traits are linked to attractiveness ratings and are often used in sexual identification. Artificial faces can be made to appear male or female just by manipulating lightness and/or feature contrast. Both these cues are suspected to operate independently - each can be changed separately to result in a more male or female looking face. This is further confirmed by the common usage of cosmetics and its effect on femininity and attractiveness. However, facial contrast and its social perception have been so far studied only in Euro-American and East Asian samples. Both these populations are very light-skinned and, therefore, the conclusions should not be applied universally across all human populations. Our recent study on a Central-West African population (Cameroon) shows that although we can find some similarities, sexual dimorphism in facial contrast in this sample significantly differs from previous findings. Especially the lightness contrast between lips and surrounding skin is inverse and shows no significant sexual dimorphism. Some of these differences can be explained by overall lightness dimorphism. The methodology used in previous studies, being designed for light-skinned populations, fails to describe the full extent of this dimorphism. We, therefore, propose a new approach to quantify facial color dimorphism, combining the two previous approaches (overall lightness and feature contrast) into one complex. This allows extending the application of this methodology to the African population as well as other human populations characterized by high variation in skin color between and within sexes.

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The effect of birth order on the probability of university enrolmentRadim Kuba^{1, 2}Jaroslav Flegr²Jan Havlíček³

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The birth order influences various psychological characteristics ranging from personality traits to sexual behaviour. Yet while many studies suggest that firstborn children are likely to achieve a higher educational level than their siblings, other studies reported no such effect. In the present study, we have tested the effect of birth order on educational achievements. We collected birth-order data from two cohorts of biology students (Study 1: students from 1990-1995, N = 271; Study 2: students from 2011-2017, N = 2049) at the Charles University, Prague, Czech Republic. The proportion of firstborns in both cohorts was compared to population data obtained from the Czech Statistical Office and controlled for sex and family size. In both groups of students, we found a significantly higher proportion of firstborns than in the general population. In Study 1 we expected firstborns to form 44.8% of the cohort but found 63.1%. In Study 2, the expected proportion of firstborns was 48.1%, while the proportion actually found was 64.0%. We have also observed a considerable influence of family size on the size of the birth-order effect. Comparison between the two cohorts had also shown that over the last two decades, overrepresentation of firstborns had significantly declined, which probably reflects a decrease in the stringency of entrance examinations to the Faculty of Science over the past two decades. Our results support previous findings regarding the advantage of firstborns in educational achievements. By comparing the two cohorts 20 years apart, this study also offers a unique opportunity to evaluate the birth-order effect in relation to sociodemographic changes over a certain time period. In particular, our study demonstrates that the birth-order effect is robust enough to withstand the dramatic changes in university attendance in present-day Czech Republic.

41**Mechanisms of violence transmission: Credible displays, prestige, dominance, and religion**Dan Řezníček¹¹ *Laboratory for the Experimental Research of Religion (LEVYNA), Masaryk University, Brno, Czech Republic*

The pervasive problem of religiously fueled intergroup violence can be tackled from the perspective of cultural evolution by studying how various psychological biases facilitate the transmission of violent behavior. I propose that the combination of the credibility enhancing displays bias with the prestige bias can lay the ground for the transmission of violent behavior toward out-groups during an intergroup conflict, especially when framed with religious narratives and symbols. My poster will present ongoing experimental research on modeling intergroup violence and religion's influence on involved learning biases and group dynamics: (1) experimental results assessing the trustworthiness of a violent in-group member through self-reports, and (2) behavioral experimental designs utilizing economic games and eye-tracking methodologies. Understanding and explaining these mechanisms and group dynamics on a proximate level can help prevent more effectively the devastating outbreaks of "eye-for-an-eye" violence which tend to "stick around", especially if framed in religious rhetoric.

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Some critical notes to the Czech system of evaluation of research

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In this work we try to critically analyze some aspects of the system of evaluation of scientific research in the Czech Republic. The government presents it as very objective, fair and motivating. Using the state evaluating methodology, data obtained from Journal of Citation Reports and mathematical models we would like to show and prove that the system is neither fair nor motivating.

Effect of hormonal contraception use during relationship formation on subsequent relationship satisfaction

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Results of previous studies testing the influence of oral contraceptives (OC) on relationship satisfaction have produced mixed results. These discrepancies might be explained by the „Congruency hypothesis“, which predicts that relationship satisfaction is determined by the congruency (or non-congruency) between current use of OC and use during relationship formation. This is because OC appear to alter women’s mate preferences, so that attraction to their partner may have changed in non-congruent women. Indeed, previous studies have shown that women in a non-congruent state were less sexually satisfied with their partner, even though generally they were more satisfied in their relationship.

The aim of our study was to test the congruency hypothesis in two samples which consisted of i) 660 couples attending the In vitro Fertilisation Clinic and ii) 123 couples who conceived naturally; None of the women was currently using OC. Both partners completed a questionnaire on relationship and sexual satisfaction, women also provided information on OC use during relationship formation. Based on previous studies, we expected that women who used OC at the time of relationship formation would report lower sexual satisfaction with their partner than women who did not use OC during relationship formation.

In contrast to previous studies, we did not find significant difference in sexual satisfaction between OC users and OC non-users in both samples. We also found that in the set of naturally conceived women, that women who used OC when they met their partners, showed significantly higher relationship satisfaction than women who did not use OC at this time. Linear regression has been used controlling for relationship length and education level. Our results could have been affected by a specific sets of couples. In addition, we observed that the partners reported predominantly high sexual and overall satisfaction so there could be a ceiling effect.

The evolution of anatomical changes in the skull and their physiological consequences for the process of breathing in the upper respiratory tracts in humans

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Why such a high incidence rate of sinusitis and otitis media is observed only in humans, which seriously limit their sense of smell and can deprive the hearing?

The causes of the prevalence of both medical units can be found in the evolution of Homo Sapiens. Adaptation of man to bipedalism, improvement of the unique speech apparatus (lower larynx position), loss of progeny, migration of the sieve bone deeper into the skull, modification of the dentition associated with diet change and change of the palate shape are some of the factors that had probably a significant impact for the future anatomy, physiology and topography of the paranasal sinuses, especially sieve bone and Eustachian's trumpet.

The topography of Hiatus maxillaris is unfavorable for the functioning of the maxillary sinus drain, and this because of the relatively high position of the high rear section on the nasal cavity side wall, just under the sinus vault. This causes difficulty in the secretions drainage from the mouth to the nasal cavity. The upright position, acquired during human evolution, caused that the mucus of the maxillary sinus doesn't drain into the nasal cavity by gravity, as it is in other primates and four-legged vertebrates, in which tilting the head helps in draining the sinus. The same problem applies to drainage of the middle ear, where we observe less freedom of mucus draining into the nasopharynx (nasopharyngeal part) and setting bony part of the Eustachian's trumpet in the middle ear, located on the level of the Malleus neck, which is the most unfavorable place in the bottom of the hypotympanum.

The presented anatomical changes and their physiological consequences of the breathing process in the upper respiratory tracts could cause that the bipedal human became more vulnerable to sinusitis and otitis media and also the air irritants and biological aerosols.

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Homo sapiens. Why don't humans have a penis bone?Anna Stangret¹Iwona Teul¹Martyna Żurawiecka²Iwona Wronka²¹ Department of Human and Clinical Anatomy, Pomeranian Medical University, Szczecin, Poland² Institute of Zoology and Biomedical Research, Jagiellonian University, Krakow, Poland

Baculum the os penis or os Priapiis the most varied bone, in terms of anatomy and morphology. It occurs in a different size, length and shape, even between closely related species. Because of that, its structure was often used by researchers for diagnosis of species and taxonomies. The penis bone evolved in mammals more than 95 million years ago and was present in the first primates that emerged about 50 millions years ago.

From anatomical point of view, the presence of the baculum in the human penis is pathology. Only 44 reported clinical cases have been described worldwide (including Peyronie's disease). The bone is located above the male urethra, and it aids sexual reproduction to maintaining sufficient stiffness during sexual penetration. However, the reasons of this loss are still elusive, but most likely connected with changes in primates breeding.

Some of the hypotheses suggested bone loss as a result of body verticalization, the mating position and mating speed of Homo Sapiens. Other researchers claim that humans may have lost their penis bones when monogamy emerged as the dominant reproductive strategy during the time of Homo erectus (about 1.9 million years ago). However, hypotheses directly related to anthropology and evolutionism explain the fact of losing baculum as a reflection of a lower level of sperm competition in humans compared to primates (confirming fact is for example small size of the testicles in men). Richard Dawkins suggests that the loss of the bone in humans (present at their closest relative— chimpanzee) is probably caused by sexual selection, which is the result of women research for signs of health in their potential partners. Weaker erection reveals physical or mental health problems. Therefore, the female can assess the quality of the male, through the observation of his ability to have a full erection even without the presence of the baculum.

Cross-cultural agreement on perceived fear: Example of snakes and spiders

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A hypothesis of evolutionary psychology states that our ancestors have developed an adaptive sense of "animal attractiveness" that became part of human mind before geographic and cultural diversification of our kind. Thus, experiments were performed to assess the possible aesthetic cross-cultural differences using animal pictures as evolutionarily relevant stimuli for humans. In Papua New Guinea, which is inhabited by highly venomous elapid snakes, villagers evaluated the beauty of booid snakes similarly to Czech students; the cross-cultural agreement on beauty ranking was relatively high ($r^2 = 0.76$). This is despite an entirely different cross-cultural background of the Papuans who are exposed to a higher envenoming risk than people in Central Europe. A broader cross-cultural agreement (ranging from 0.56 up to 0.92) on beauty of these snakes was also found between the Papuans and villagers from Bolivia, Philippines, India, Malawi, and Morocco. The cross-cultural agreement does not apply only to the aesthetic judgement of snakes, but also on the fear they evoke in humans. We compared preferences for snakes and fear elicited by these animals between respondents from the Czech Republic and Azerbaijan. Both groups rated vipers as highly fear eliciting, while slender bodied elapids were perceived as less fear eliciting. Now we continue our studies in Africa, where we compare preferences of Europeans with the natives of Somaliland and the pygmy hunter gatherers from Cameroon. Moreover, although snakes have been used as an example of prototypical fear-activating stimulus, the most common specific fear in Western societies, reported by 55% of women and 18% of men in the U.K, is the fear of spiders. Thus, we compare the pattern of spider versus snake dangerousness and aesthetic judgement ranked by respondents from Czechia, Azerbaijan, and Africa. This study is a result of the research funded by the Czech Science Foundation as the projects GAČR 17-15991S and 19-07164S.

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Trait openness and agreeableness are related to a left-leaning political orientation but are negatively related to the endorsement of totalitarian idealsDavid Hollick¹Christopher Watkins¹¹ *Division of Psychology, University of Abertay, Dundee, United Kingdom*

Relationships between temperament and political orientation are well established. It is unclear, however, if these results are moderated by one's opinions of how political groups should execute their goals, with or without regard to individual liberty. Here, we examined whether prior relationships observed between the 'Big Five' and political orientation i) are replicated using a short-form measure of the instrument and ii) alter when including participants' endorsement of authoritarian/totalitarian ideals versus libertarian ideals (ETI) in the same model. Moreover, given the purported role of agentic personality traits in alliance politics and leadership emergence, we examined whether self-reported dominance was related to low concern for individual liberty in the political sphere (i.e. endorsing totalitarian ideals). Our data revealed that openness, agreeableness and ETI were independently related to a left-leaning political orientation. When controlling for political orientation, low openness and agreeableness were related to ETI. The only relationship between dominance and political beliefs observed was a non-robust positive correlation with a right-leaning political orientation. Our research using the short-form of the 'Big Five' replicates some of the prior work on personality and political orientation. The ETI scale we used is suitable for testing predictions about these behaviours among left-leaning individuals. Self-reported dominance was not reliably related to political beliefs (after correcting for multiple comparisons). Collectively, our findings may be of utility for further research on sociality, temperament and political behaviour studied from evolutionary and biological perspectives.

Ovulatory shifts in sexual desire but not mate preferences: An LH-test-confirmed, longitudinal study

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The presented data are part of a longitudinal within-subject study designed to examine ovulatory shifts in human sexuality in a diverse German sample using validated questionnaires. The final sample consists of 78 individuals (76 female, 2 agender) who declared to be mainly or exclusively attracted to males. Questionnaires were completed anonymously online at three cycle phases. Following the gold standard, the fertile window was calculated through the reverse cycle day method and confirmed via urinary tests detecting luteinizing hormone. The questionnaire included the Sexual Desire Inventory, Dresdner Body Image Inventory, the Revised Sociosexual Orientation Inventory, and an adjective list to measure mate preferences. One hundred eighty-four questionnaires were included in the data analysis using linear mixed models. Findings support previous research reporting heightened sexual desire and an improved body image during the fertile window. No shifts were found for mate preference or sociosexual orientation, thus adding to a growing body of literature contesting parts of the ovulatory shift hypothesis.

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Does the age at menarche affect the pattern of menstrual cycles in early adulthood?Martyna Zurawiecka¹¹ Faculty of Biology, Jagiellonian University, Krakow, Poland

For many years a trends towards a younger age at menarche has been observed. Simultaneously, more and more paper show negative consequences of early puberty.

The aim of the present study was to determine the effects of early and late onset of menarche on menstrual disturbances among university students.

Research was carried out among 1065 childless women, aged 19–24 years who were not pregnant, had not used contraceptives in the preceding year, had menstrual cycles during that year and did not have a treatment history for menstrual irregularity or infertility. The age at the first menstruation was assessed by a retrospective method based on information given by the students in question. Data related to the pattern of menstrual cycle were gathered by a survey.

Significant differences were observed in the pattern of menstrual cycles with relation to age at menarche. Menstrual disturbance were more prevalent among girls who experience menarche at younger age. Among late maturing group irregular cycles were more frequent than among those reached puberty at younger age. The length of cycles was determined only for the females who said they had periods in regular time intervals. No differences in the length of cycles and the prevalence of oligomenorrhoea and polymenorrhoea between early, average and late maturing subjects were observed. There were also no differences observed regarding the number of days with menstruation bleeding, however the late maturing women slightly more frequently declared that the bleeding was profuse. Females with early age at menarche more often reported menstrual pain. Additionally, logistic regression was used to estimate the risk of menstrual disturbance depending on the rate of maturation. The lowest risk of irregular cycle and the highest risk of menstrual pain were noted among early maturing subjects. The relationship between the rate of maturation and the likelihood of menstrual disturbance remains statistically significant also after adjustment for BMI and WHtR.

Social behavior of captive Philippine tarsier (*Tarsius syrichta*)

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Social interactions of the nocturnal primates are not well studied. One of the species for which social behavior is scarcely known is the Philippine tarsier (*Tarsius syrichta*). We observed a reproducing pair of captive individuals over two breeding seasons for two consecutive years. The tarsiers spent on average less than 4% of their time budget on social interactions, ca. 20% of time in 0–1 m proximity to each other, and slept next to/near each other for half of the time. The majority of the animals' social interactions were peaceful: affiliative and sexual (over 80%), and the smallest component of the behavior was agonistic. Affiliative interactions were evenly performed by both sexes, the majority of agonistic interactions were initiated by the female, while all sexual interactions – by the male. We witnessed two copulation events (one per estrous day), each lasting ca. 5 min, and both occurring just after waking. The male emitted significantly more vocalizations than the female. We revealed temporal (nightly and hourly) fluctuations in the frequency of social interactions, in the distances the individuals spent from each other, and in the number of vocalizations. The results present the first assessment of the social behavior of the Philippine tarsier, much needed to improve the captive breeding management for this highly sensitive species threatened with extinction.

Rh heterozygous mothers have more sons. Trivers-Willard in action?

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The results of previous studies overwhelmingly suggest that Rh-positive heterozygotes express better health status than Rh-positive, and especially Rh-negative, homozygotes. This also applies to pregnant women. According to the Trivers-Willard hypothesis, women in better physical condition should have a male-skewed sex ratio. Therefore, we decided to test the hypothesis that Rh-positive heterozygous mothers give birth to more sons than daughters. We analysed data from 5,655 women who have given birth in the General University Hospital in Prague, Czech Republic between 2008 and 2012 by the means of a cross-sectional study. Clinical records comprised maternal weight before pregnancy, number of previous deliveries, sex of the new-born, maternal Rh phenotype, and Rh phenotype of the new-born. Secondary sex ratio was significantly higher ($P = 0,028$) in Rh-positive mothers who had Rh-negative new-borns, i.e., in heterozygotes ($SR = 1,23$), than in Rh-positive mothers who gave birth to Rh-positive new-borns, i.e., in a mixed population of heterozygotes and homozygotes ($SR = 1,00$). The effect was especially pronounced in primiparous women ($P = 0,013$; $SR = 1,37$ and $0,99$ respectively). This result is in line with the Trivers-Willard effect. Moreover, it further supports the hypothesis that minority Rh-negative allele has been maintained in European population in relatively high frequency (about 40 % of the standing polymorphism) despite severe impairment of recessive homozygotes due to heterozygote health advantages. Balancing selection obviously may be important factor that helps maintaining genetic polymorphism in populations, which is of paramount importance for biology and medicine.

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Men election over women Secondary Sex Characteristics for mate choiceRodrigo Juan Soto-López^{1,2}¹ Faculty of Medicine, Universidad Nacional Autónoma de México, Ciudad de México, México² Departamento de Etología, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Ciudad de México, México

Attractiveness is an adaptive function, which provides information that reflects health, genetic quality and reproductive capacity, signaling a good handicap and increasing the probability of obtain offspring with better genes. We consider that presence of a big number of SSC in human females arise because competition between females and males sexual selection, implying that males and females are capable of identify and qualify this SSC as humans have evolved with the capacity of judge attractiveness of potential partners with desirable characteristics, increasing reproductive success compared to what would be obtained with random copulations, so most attractive females obtain more copulations and access to males of better quality. Females express visual, auditory and olfactory SSC which are honest signals that men can identify and qualify. Due to the large amount of SSC present in women, it is possible that men have the ability to choose between different characters and rank them depending on the trait that is signalling each character to improve their ability to choose potential partners. To prove that healthier women are more attractive than unhealthy women and also than males rank female SSC, we took pictures, measurements and voice audio from women college students, and we divided them in three categories: women who do high performance exercise, women who do medium level exercise and women who do not exercise. Those samples were shown to 100 college male students, and they were asked to ranking CSS from more to less attractive. Each student ranked the SSC of one woman of each category and select between the three of them who was the more attractive one. The information obtained was analysed whit a Path Analysis to now the interactions between the selections of different SSC and determinate which traits are more attractive.

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**Discrimination in the housing market:
Evolutionary explanation for intra-sexual competition**Anna Szala¹Jan Antfolk²Annamaria Öblom²¹ Department of Psychology, Oakland University, Rochester, Michigan, USA² Department of Psychology, Åbo Akademi University, Turku, Finland

Discrimination is associated with less social integration and is harmful at both social and individual levels. Here, we studied discrimination in English and Polish housing markets and expected ethnic- and gender-based discrimination in both housing markets. Conducting a preregistered field experiment of discrimination, we sent e-mails with inquiries about advertisements for 960 property rentals in England and Poland. Inquiries were signed with Arabic-, English-, or Polish-sounding male and female names. In the English housing market, there was no statistically significant difference between the proportions of responses received for inquiries signed with Arabic, English, or Polish male or female names. In the Polish housing market, however, we received fewer responses to inquiries signed with Arabic male names than inquiries signed with any other names. This suggests discrimination against Arabic men in the Polish housing market, but not in the English housing market. The findings of this study are discussed against predictions derived from the evolutionary theory of intra-sexual competition, as well as previous findings regarding immigration attitudes.

Dermatoglyphics, an indicator of early-life environment, predicts fertility in women

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Dermatoglyphic patterns are under genetic and environmental (including sex hormones) influence and are biomarkers of early developmental conditions. Dermatoglyphics are related to many diseases, including reproductive cancers (breast, cervix) in women. Here we analyze, for the first time, the association between two dermatoglyphic biomarkers and women's reproduction (number of children, age at first and last birth, mean interbirth interval and reproductive span).

The participants were 237 women aged 45-92 (mean=61.6; SD=11.18) from a rural population with natural fertility at the Mogielica Human Ecology Study Site in Poland. Two dermatoglyphic indices: AFRC (Absolute Finger Ridge Count, the total amount of ridge counts in both hands) and Md15 (the difference between mean number of ridge counts on thumbs and little fingers between hands) were calculated according to standard procedures. Age, education, age at marriage, age at first birth, mean interbirth interval, husband's age at marriage and age difference between spouses were included as covariates, depending on the analysis.

AFRC was negatively related to the number of children ($p=0.02$), age at last birth ($p=0.03$) and reproductive span ($p=0.02$). Md15 was negatively related to reproductive span ($p=0.02$). No statistically significant associations were observed for age at first birth and mean interbirth interval.

Our results suggest that more favorable early environmental conditions, reflected in lower values of AFRC and Md15 indices, are related to women's higher reproductive success (but not the beginning of the reproductive span nor the intensity of it). This study adds to the growing body of evidence that early developmental conditions are important for shaping selected aspects of women's reproductive trajectory.

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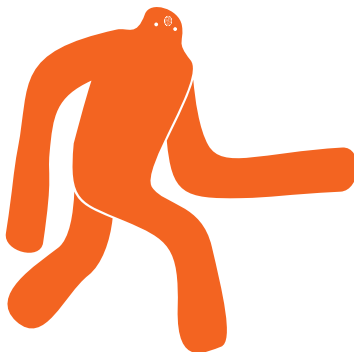
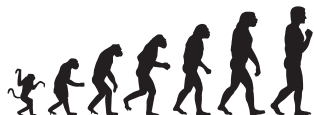
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